DEPARTMENT OF MINES
HON. MARTIN BURRELL, MINISTER; R. G. MCCONNELL, DEPUTY MINISTER

MINES BRANCH
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THE PRODUCTION OF IRON AND STEEL IN CANADA

During the Calendar Year

1918

JOHN McLEISH, B.A.
Chief of the Division of Mineral Resources and Statistics

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
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ADVANCE CHAPTER OF THE ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA, DURING THE CALENDAR YEAR 1918.

(Tons used throughout this report are short tons of 2,000 pounds, except where otherwise stated.)

CONTENTS.

IRON AND STEEL.

Introductory.

The actual quantity of iron ore derived from Canadian iron mines during 1918 was, with the exception of the year 1911, the lowest since 1900.

During the past 18 years the production has varied between a minimum of 122,000 tons and a maximum of 404,000 tons and for many years has not contributed more than 5 per cent of domestic requirements in iron.

The metallurgical industry based upon imported ores has continued to develop and in both pig-iron and steel attained its maximum output during 1918, but is still supplying but a fraction of Canada's requirements in manufactured iron and steel products.

The average annual production of pig-iron during the last seven years has been a little in excess of 1,000,000 tons, a large percentage of which has been converted into steel. The annual production of steel has nearly doubled since 1912 amounting during 1918 to 1,873,708 tons. Supplementing the domestic production of steel the annual imports of iron and steel products in so far as it is possible to determine the quantities has for a number of years considerably exceeded 1,000,000 tons.

Notwithstanding the country's heavy imports a considerable export was made during the war more particularly of ferro-alloys, billets, bars and rods, rails and wire.

Summary of Iron and Steel Statistics, 1915-18.

		1915.	1916.	1917.	1918.
Iron ore shipped from mines	Short tons.	398,112	275,176	215,302	211,608
Canadian iron ore charged to blast furnaces.	"	293,305	221,773	92,065	96,745
Imported iron ore charged to blast furnaces	"	1,463,488	1,964,598	2,084,231	2,146,995
Iron ore charged to steel furnaces	"	74,872	55,039	39,793	48,599
Pig-iron made in blast furnaces	"	913,775	1,169,257	1,156,789	1,163,520
Pig-iron made in electric furnaces	"			13,691	32,031
Pig-iron and ferro-alloys exported	"	26,545	46,106	45,293	25,911
Pig-iron imported	"	47,842	58,130	83,400	67,397
Ferro-alloys made	"	10,794	28,628	43,465	44,704
Ferro-alloys imported	"	13,758	14,777	12,829	35,284
Pig-iron and ferro-alloy consumption	"	959,254	1,235,218	1,264,870	1,316,025
Pig-iron used in steel furnaces	"	747,834	949,444	1,112,082	897,537
Steel ingots and castings made.	"	1,020,336	1,428,249	1,745,734	1,873,708
Steel rails made	"	232,411	90,123	46,645	162,747
Canadian coke used in iron blast furnaces	"	578,743	712,715	634,962	561,135
Imported coke used in iron blast furnaces.	"	486,022	645,488	723,657	861,522
Iron and steel imported	"	771,007	864,916	929,776	786,097
Number of completed blast furnaces	No.	19	20		
Number of men employed in blast furnaces	"	1,004			
Wages paid in blast furnaces	$	675,453			
Value of pig-iron produced	$	11,374,199	17,750,898	24,290,101	33,495,171
Value of iron and steel goods exported	$	48,268,148	77,837,681	46,791,681	54,764,742
Value of iron and steel goods imported	$	74,308,983	97,090,168	187,191,534	169,538,669

74474—2

Average Monthly Prices of Iron and Steel Products in Pittsburgh in 1918.

——	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
PIG-IRON—												
Bessemer	37 25	37 25	37 25	36 15	36 15	36 37	36 60	36 60	36 60	36 60	36 60	36 60
Basic	33 95	33 95	33 95	32 95	32 95	33 17	33 40	33 40	33 40	34 40	34 40	34 40
Foundry No. 2	33 95	33 95	33 95	33 95	33 95	34 17	34 40	34 40	34 40	35 40	35 40	35 40
Malleable	34 45	34 45	34 45	34 45	34 45	34 67	34 90	34 90	34 90	35 90	35 90	35 90
Gray forge	32 95	32 95	32 95	32 95	32 95	33 17	33 40	33 40	33 40	34 40	34 40	34 40
FERRO-ALLOYS—												
Ferro-silicon (50 per cent) del	175 00	175 00	177 50	172 50	170 00	170 00	165 00	153 50	150 00	151 00	150 00	150 00
Ferro-silicon (10 per cent) fur	55 00	55 00	55 00	55 00	55 00	55 00	55 00	55 00	55 00	57 00	57 00	57 00
SEMIFINISHED—												
Bessemer billets	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50
Open-hearth billets	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50	47 50
Bessemer sheet bars	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00
Open-hearth sheet bars	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00
Wire rods	57 00	57 00	57 00	57 00	57 00	57 00	57 00	57 00	57 25	57 50	57 50	57 50
ROLLED PRODUCTS—												
Structural shapes, base	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00
Plates, base	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25
Steel bars, base	2 90	2 90	2 90	2 90	2 90	2 90	2 90	2 90	2 90	2 90	2 90	2 90
Bar iron, base	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50
Shafting, discount	17 00	17 00	17 00	17 00	17 00	17 00	17 00	17 00	17 00	17 00	17 00	17 00
Steel pipe, ⅜ to 3 in. discount	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00	51 00
Standard spikes	4 02	3 90	3 90	3 90	3 90	3 90	3 90	3 90	3 90	3 90	3 90	3 90
Hoops	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50
Bands	2 90	2 90	2 90	2 90	3 02	3 50	3 50	3 50	3 50	3 50	3 50	3 50
Structural rivets	4 65	4 65	4 65	4 65	4 60	4 40	4 40	4 40	4 40	4 40	4 40	4 40
No. 28 black sheets	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00
No. 28 galvanized sheets	6 25	6 25	6 25	6 25	6 25	6 25	6 25	6 25	6 25	6 25	6 25	6 25
No. 10 blue annealed sheets	4 25	4 25	4 25	4 25	4 25	4 25	4 25	4 25	4 25	4 25	4 25	4 25
Wire nails, base	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50	3 50
Plain wire, base	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25	3 25
Tin plate	7 75	7 75	7 75	7 75	7 75	7 75	7 75	7 75	7 75	7,75	7 75	7 75
OLD MATERIAL—												
Heavy melting steel	$30 00	$30 00	$30 00	$29 00	$29 00	$29 00	$29 00	$29 00	$29 00	$29 00	$28 75	$28 00
Low phosphorus	42 20	40 00	40 00	39 00	39 00	39 00	39 00	39 00	39 00	39 00	38 60	38 50
No. 1, cast	28 00	28 00	28 00	34 00	32 50	32 50	32 50	32 50	32 50	32 50	32 40	32 00

IRON ORE.

The total shipments of iron ores from Canadian mines show a further falling off in 1918, being only 211,608 short tons valued at $885,893, or an average of $4.18 per ton as compared with shipments in 1917 of 215,302 tons valued at $758,621, or an average of $3.52 per ton. The 1918 shipments included 8,159 tons from Quebec; 201,119 tons from mines in Ontario, and 2,200 tons mined in British Columbia. The ores comprised 171,312 tons of hematite and roasted hematite and siderite, 33,066 tons of magnetite, 6,330 tons of ilmenite and titaniferous ore, and 900 tons (dry) of bog ore.

The principal operations were as usual in Ontario at Helen and Magpie mines of the Algoma Steel Corporation, Ltd., all the ores mined being first roasted in the rotary kilns at Magpie before shipment. The magnetite properties at Sellwood were operated throughout the year by Moose Mountain, Limited, with an important production of briquettes from the milling and briquetting plant. The ore milled averaged about 33·8 per cent in iron, while the briquettes produced contained about 61·1 per cent iron. Shipments of 741 tons were made from three small properties in eastern Ontario.

In Quebec shipments of ilmenite were made from Ivry-on-the-Lake in Terrebonne county, and of titaniferous ore from St. Urbain on the north shore of the St. Lawrence. Some magnetite was also shipped from ore dumps at the old Forsyth mine in Hull township.

In British Columbia some magnetite was shipped from Texada Island and a small tonnage of bog ore from near Alta Lake on the Pacific Great Eastern Railway.

Shipments of Iron Ore by Provinces, 1916-17-18.

Provinces.	1916.		1917.		1918.	
	Short Tons.	Value.	Short Tons.	Value.	Short Tons.	Value.
		$		$		$
Nova Scotia	.....	.....	.....	.....	130	1,040
Quebec	3,209	8,308	17,189	54,815	8,159	44,531
Ontario	271,967	706,799	198,113	703,806	201,119	833,722
British Columbia	.....	.....	.....	.....	2,200	6,600
	275,176	715,107	215,302	758,621	211,608	885,893

Shipments of Iron Ore by Classes of Ore, 1907-1918.

(In Short Tons.)

Year.	Hematite.	Magnetite.	Carbonate Including Siderite.	Bog Ore.	Total.
1907	205,795	50,073	42,740	14,248	312,856
1908	173,164	49,946	4,869	10,103	238,082
1909	190,473	74,240	.....	3,330	268,043
1910	130,380	127,768	.....	1,270	259,418
1911	137,399	72,945	.....	.....	210,344
1912	86,971	128,912	.....	.....	215,883
1913	(a) 92,386	215,248	.....	.....	307,634
1914	89,454	45,562	109,838	.....	244,854
1915	205,989	59,217	132,906	.....	398,112
1916	45,541	19,113	(b) 210,522	.....	275,176
1917	.....	17,741	197,561	.....	215,302
1918	485	39,396	170,827	900	211,608

(a) Small tonnage of siderite included.
(b) Includes roasted siderite and a blend of siderite and high sulphur hematite, roasted.

Shipments of Iron Ore by Provinces, 1886-1918.

Calendar Year.	New Brunswick.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total. Short Tons.
1886	.....	44,388	.....	16,032	3,941	64,361
1887	.....	43,532	13,404	15,698	2,796	76,330
1888	.....	42,611	10,710	16,894	8,372	78,587
1889	.....	54,161	14,533	.....	15,487	84,181
1890	.....	49,206	22,305	5,000	.....	76,511
1891	.....	53,649	14,380	.....	950	68,979
1892	.....	78,258	22,690	.....	2,300	103,248
1893	.....	102,201	22,076	.....	1,325	125,602
1894	.....	89,379	19,492	.....	1,120	109,991
1895	.....	83,792	17,783	.....	1,222	102,797
1896	.....	58,810	17,630	15,270	196	91,906
1897	.....	23,400	22,436	2,770	2,099	50,705
1898	.....	19,079	17,873	21,111	280	58,343
1899	.....	28,000	19,420	25,126	2,071	74,617
1900	.....	18,940	19,000	82,950	1,110	122,000
1901	.....	18,619	15,489	272,538	7,000	313,646
1902	.....	16,172	18,524	359,283	10,019	404,003
1903	.....	40,335	12,035	209,634	2,290	264,294
1904	.....	61,293	16,152	141,601	.....	219,046
1905	.....	84,952	12,681	193,464	.....	291,097
1906	.....	97,820	9,933	141,078	.....	248,831
1907	.....	89,839	12,748	207,769	2,500	312,856
1908	.....	11,802	10,103	216,177	.....	238,082
1909	.....	.....	4,150	263,893	.....	268,043
1910	5,336	18,134	4,503	231,445	.....	259,418
1911	31,120	22	3,616	175,586	.....	210,344
1912	71,520	30,857	1,185	112,321	.....	215,883
1913	86,416	20,436	5,102	195,680	.....	307,634
1914	4,775	.....	.....	240,079	.....	244,854
1915	3,683	.....	.....	394,429	.....	398,112
1916	.....	.....	3,209	271,967	.....	275,176
1917	.....	.....	17,150	198,152	.....	215,302
1918	.....	130	8,159	201,119	2,200	211,608

Exports and Imports of Iron Ore.

Mine operators reported the quantity of iron ore sold for export to the United States during 1918 as 118,472 tons and the quantity shipped to Canadian furnaces 93,136 tons. In 1917 the quantity reported directly by operators as sold for export was 169,252 tons and that shipped to Canadian destinations 46,050 tons. These records differ slightly from those reported in the Trade Reports based on Customs Department statistics and shown in the accompanying table. The United States Department of Commerce record of imports from Canada is also given for comparison.

According to returns received from blast furnace operators the quantity of imported ores charged to blast furnaces during 1918 were 2,146,995 tons as against 2,084,231 tons in 1917. The imported ores charged in 1918 included 754,622 tons from Newfoundland and 1,392,373 tons from the United States "Lake District". In 1917 the imported ores charged included 874,134 tons from Wabana, Newfoundland, and 1,210,097 tons of United States "Lake Ores". The total quantity of imported ores charged to Canadian blast furnaces since 1886 has been 23,640,120 tons while the total quantity of iron ore shipped from Canadian mines during the same period was 6,186,387 tons.

Exports of Iron Ore.

Calendar Year.	Canadian Customs Record.			Calendar Year.	Imports into the United States from Canada.*		
	Short tons.	Value.	Average value.		Short tons.	Value.	Average value.
		$	$			$	$
1909	21,956	61,954	2·82				
1910	114,499	324,186	2·83				
1911	37,686	133,411	3·54	1911	56,538	106,038	1·87
1912	118,129	382,005	3·23	1912	119,476	201,882	1·69
1913	126,124	426,681	3·38	1913	201,443	409,098	2·03
1914	135,451	360,974	2·67	1914	58,816	153,415	2·61
1915	79,770	206,823	2·59	1915	94,219	245,092	2·60
1916	161,260	541,779	3·36	1916	153,255	509,602	3·32
1917	164,004	660,673	4·03	1917	200,239	766,688	3·83
1918	130,250	650,502		1918	130,250	650,502	4·99

*Compiled from the "Foreign Commerce and Navigation of the United States."

Imports of Iron Ore, 1912-1918.

Calendar Year.	United States.		Newfoundland.		Other Countries.		Total.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
		$		$		$		$
1912 (*9 mos.)	1,206,567	3,090,207	840,892	840,892	50	975	2,047,509	3,932,074
1913	1,072,156	3,007,653	869,669	869,669	500	502	1,942,325	3,877,824
1914	749,979	1,972,550	389,850	389,850	7,279	24,958	1,147,108	2,387,358
1915	715,060	1,568,866	789,029	762,328	24	561	1,504,113	2,331,755
1916	1,364,992	3,463,419	974,685	955,594	.....	.....	2,339,677	4,419,013
1917	1,309,075	4,143,084	942,322	981,805	.....	.....	2,251,397	5,124,889
1918	1,394,687	5,047,607	806,151	848,367	.....	.....	2,200,838	5,895,974

*Imports of iron ore separately stated in Customs Reports from April 1912 only.

Production of Iron Ore in Newfoundland.

The iron ore deposits at Wabana, Newfoundland, are owned and operated by the two Canadian companies operating coal mines and steel plants at Sydney and Sydney Mines, Cape Breton. The shipments from Wabana mines during 1917 were 883,346 short tons, all of which went to Cape Breton. The total shipments from Wabana since the mines were first operated in 1895 have amounted to 18,269,616 short tons, of which 12,470,861 tons were sent to Nova Scotia, 2,078,197 tons to the United States, and 3,720,558 tons to Great Britain and Europe.

IRON ORE PRICES.

The prices of Canadian iron ores are naturally based on prices current in the United States. "Lake Ores", that is, those originating in what is generally known as the Lake Superior iron region, and which contributed about 80 per cent of the iron and steel requirements of the United States are quoted per gross ton delivered at Lake Erie ports. Ore prices and freights are usually fixed at the beginning of each season, and the price of any individual ore then depends on its variation from the standard in iron and phosphorus content, etc.

Annual Shipments of Iron Ore, from Wabana Mines, Newfoundland.

Calendar Year.	To Nova Scotia.	To United States	To Great Britain and Europe.	To Total Shipments.
	Short tons.	Short tons.	Short tons.	Short tons.
1895	2,686	.....	.....	2,686
1896	17,410	22,798	.....	40,208
1897	12,143	33,039	5,651	50,833
1898	34,622	.....	78,640	113,262
1899	26,311	98,485	214,322	339,118
1900	195,507	153,867	14,776	364,150
1901	457,064	84,292	279,102	820,458
1902	376,322	96,702	341,421	814,445
1903	273,283	90,711	287,793	651,787
1904	342,710	6,025	298,694	647,429
1905	506,819	6,490	255,846	769,155
1906	628,152	141,854	213,867	983,873
1907	672,561	123,972	167,074	963,607
1908	713,772	59,532	200,033	973,337
1909	697,068	241,207	171,722	1,109,997
1910	808,762	247,336	203,528	1,259,626
1911	737,261	207,193	237,009	1,181,463
1912	956,458	191,779	183,673	1,331,910
1913	1,048,433	229,402	328,086	1,605,921
1914	417,409	43,513	172,998	633,920
1915	802,128	.....	66,323	868,451
1916	1,012,060	.....	.....	1,012,060
1917	883,346	.....	.....	883,346
1918	848,574	.....	.....	848,574
Total	12,470,861	2,078,197	3,720,558	18,269,616

Bessemer ores are quoted on the basis of 55 per cent iron natural and 0·045 per cent phosphorus dried at 212° F. The base for Non-Bessemer ores is 51·5 per cent iron natural.

Iron ore prices per gross ton during the past four years have been as follows:—

——	1914 and 1915.	1916.	1917 to July 1st, 1918.	From July 1st, 1918, to Oct. 1st, 1918.	From Oct. 1st, 1918.	From April 28th, 1919.
Old Range Bessemer	$ 3 75	$ 4 45	$ 5 95	$ 6 40	$ 6 65	$ 6 45
Messabi Bessemer	3 50	4 20	5 70	6 15	6 40	6 20
Old Range Non-Bessemer	3 00	3 70	5 20	5 65	5 90	5 70
Messabi Non-Bessemer	2 85	3 55	5 05	5 50	5 75	5 55

Since 1900 the price of Old Range Bessemer ores has ranged between a minimum of $3 in 1904 and a maximum of $6.65 in 1918, Non-Bessemer ores being generally from 50 to 80 cents lower.

Lake Freight Rates.

Lake freight rates on iron ore from upper lake ports to Lake Erie during the past four years have been as follows, in cents per ton:—

		1914.	1915.	1916.	1917.	1918.
From Escanaba, Mich.	cents.	35	25	35	75	
" Marquette, Mich.	"	45	35	45	90	
" the head of the Lakes	"	50	40	50	100	

Iron Ore Production in the United States.

The shipments of iron ore from the Lake Superior district during 1918 including both rail and water shipments were 59,779,794 gross tons as compared with 63,481,321 tons shipped in 1917. The shipments in 1916 were 66,658,466

gross tons; in 1915, 47,272,751 gross tons; in 1914, 32,729,726 gross tons and in 1913, 49,947,116 gross tons.

The total shipments of iron ore from all sources in the United States were in 1918 72,021,202 gross tons, as compared with 75,573,207 gross tons in 1917; 77,870,553 gross tons in 1916; 55,493,100 gross tons in 1915; 41,439,761 gross tons in 1914 and 61,980,437 gross tons in 1913.

During the past twenty years the Lake Superior district has supplied from 80 to 95 per cent of the total United States production.

Pig-Iron.

The total production of pig-iron in Canada in 1918 excluding the production of ferro-alloys was 1,195,551 short tons (1,067,456 gross tons) having a value of $33,495,171 as compared with a total production in 1917 of 1,170,480 short tons (1,045,071 gross tons) valued at $25,025,960. Of the total production 1,163,520 short tons were made in blast furnaces and 32,031 tons were manufactured in electric furnaces from scrap steel, chiefly shell turnings. In 1917 the blast furnace production was 1,156,789 tons and the electric furnace production from scrap steel was 13,691 tons. Thus, although the total production of pig-iron was greater than in any previous year the blast furnace production was less in 1918 than the output of 1916. The recovery of high grade low phosphorus pig-iron in electric furnaces from steel turnings was in 1918 nearly two and one-half times the production in 1917, the first year that these operations were undertaken.

Annual Production of Pig-Iron by Provinces, 1887-1918.

Year.	Nova Scotia.		Ontario.		Quebec.		Total.	
	Short Tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
		$		$		$		$
1887	19,320	250,000	.....	.....	5,507	116,192	24,827	366,192
1888	17,556	211,403	.....	.....	4,243	101,832	21,799	313,235
1889	21,289	383,202	.....	.....	4,632	116,670	25,921	499,872
1890	18,382	262,608	.....	.....	3,390	69,080	21,772	331,688
1891	20,840	297,728	.....	.....	3,051	71,173	23,891	368,901
1892	34,393	458,556	.....	.....	8,050	178,865	42,443	637,421
1893	46,472	553,408	.....	.....	9,475	236,875	55,947	790,283
1894	41,344	449,533	.....	.....	8,623	196,914	49,967	646,447
1895	35,192	417,083	.....	.....	7,262	169,653	42,454	586,736
1896	32,351	400,829	28,302	368,942	6,615	154,358	67,268	924,129
1897	22,500	230,000	26,115	291,466	9,392	217,235	58,007	738,701
1898	21,627	221,677	48,253	530,789	7,135	159,929	77,015	912,395
1899	31,100	404,300	64,749	808,157	7,094	164,849	102,943	1,377,306
1900	28,133	421,995	62,387	938,725	6,055	140,978	96,575	1,501,698
1901	151,130	1,764,017	116,371	1,599,413	6,875	149,493	274,376	3,512,923
1902	237,244	2,477,767	112,688	1,584,273	7,970	181,501	357,902	4,243,541
1903	201,246	2,186,273	87,004	1,345,464	9,635	210,973	297,885	3,742,710
1904	164,488	1,700,130	127,845	1,746,126	11,121	241,729	303,454	3,687,985
1905	261,014	2,440,722	256,704	3,868,197	7,588	166,267	525,306	6,475,186
1906	315,008	3,439,217	275,558	[illegible]39,275	7,845	177,644	598,411	7,955,136
1907	366,456	4,211,913	275,459	309	10,047	432,004	651 962	9,125,226
1908	352,642	3,554,540	271,484	271	6,709	171,383	630,835	8,111,194
1909	345,380	3,453,800	407,012	,441	4,770	125,623	757,162	9,581,864
1910	350,287	4,203,444	447,273	[illegible],923	3,237	85,255	800,797	11,245,622
1911	390,242	4,682,904	526,635	7,606,939	658	17,282	917,535	12,307,125
1912	424,994	6,374,910	589,593	8,176,089	.....	.....	1,014,587	14,550,999
1913	480,068	7,201,020	648,899	9,338,992	.....	.....	1,128,967	16,540,012
1914	227,052	2,951,676	556,112	7,051,180	.....	.....	783,164	10,002,856
1915	420,275	5,463,575	493,500	5,910,624	.....	.....	913,775	11,374,199
1916	470,055	7,050,825	699,202	9,700,073	.....	.....	1,169,257	16,750,898
1917	472,147	10,387,234	698,333	14,638,726	(a).....	.....	1,170,480	25,025,960
1918	415,870	10,451,400	769,822	22,455,550	(b) 9,859	588,221	1,195,551	33,495,171

(a) Included with Ontario. (b) Includes British Columbia.

Annual Production of Pig-Iron by Grades, and by Fuels.

(In Short Tons.)

Year.	By Grades.			By Fuels.		Electric
	Basic.	Bessemer.	Foundry and all other.	Charcoal.	Coke.	
1909	400,9[illegible]	222,931	133,310	17,003	740,159	.....
1910	425,400	219,492	155,905	17,164	783,633	.....
1911	464,221	208,626	244,688	20,759	896,776	.....
1912	54[illegible] 534	256,191	213,362	21,701	992,886	.....
1913	614,845	265,685	248,437	23,696	1,105,271	.....
1914	346,553	230,817	205,794	9,380	773,784	.....
1915	739,613	29,052	145,110	13,692	900,083	.....
1916	953,627	31,388	184,242	17,304	1,151,953	.....
1917	961,656	*27,783	181,041	14,092	1,142,607	13,601
1918	966,409	47,446	178,099	.....	1,163,520	32,031

*Including electric furnace pig.

Monthly Prices of Foundry Pig-Iron at Montreal.*

——	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
January	18 00	18 50	21 00	19 75	22 00	19 75	19 35	23 50	28 00	**
February	18 00	18 50	21 00	19 00	22 00	19 75	19 35	23 50	28 30	
March	18 00	18 50	21 00	19 00	22 00	19 75	20 10	24 00	28 30	
April	18 00	19 00	21 00	18 50	22 00	19 75	19 90	25 00	30 35	
May	18 75	19 00	19 25	18 50	22 00	19 75	19 90	25 00	40 45	
June	18 75	18 50	19 25	18 50	21 50	19 75	19 90	25 00	40 50	
July	18 50	18 50	19 25	18 50	20 50	19 50	19 90	25 00	40 50	
August	18 50	18 00	19 25	19 00	20 50	19 50	19 90	25 00	**	
September	18 50	18 00	19 25	20 00	20 50	19 50	20 00	25 00	**	
October	19 00	21 00	19 25	20 50	20 50	19 50	20 00	25 00	**	
November	19 00	21 00	19 25	20 50	19 75	19 40	21 00	25 00	**	
December	19 00	21 00	19 25	21 50	19 75	19 40	22 00	28 00	**	**
Average	18 50	19 13	19 83	19 44	21 17	19 61	20 10	24 92		

*No. 1 Foundry Pig-iron, f.o.b. cars Montreal, price per ton of 2,240 pounds on the opening market day of each month. Quotation furnished by the Dominion Iron & Steel Co., Ltd.
** No quotation.

Average Monthly Prices of Bessemer Pig-Iron at Pittsburgh.*

Per Gross Ton (2,240 Pounds).

	1909.	1910.	1911.	1912.	1913.	'9[illegible]	1915.	1916.	1917.	1918.
	$	$	$	$	$	$	$	$	$	$
January	17·34	19·90	15·90	15·05	18·15	14·96	14·59	21·58	35·95	37·25
February	16·78	19·34	15·90	15·90	18·15	15·09	14·55	21·51	35·95	37·25
March	16·25	18·60	15·90	15·09	18·15	15·09	14·55	21·75	37·70	37·25
April	15·78	18·27	15·90	15·15	17·90	14·90	14·55	21·95	42·20	36·15
May	15·84	17·52	15·90	15·13	17·70	14·90	14·59	21·95	45·15	36·15
June	16·05	16·60	15·90	15·15	17·14	14·90	14·70	21·95	54·70	36·37
July	16·46	16·40	15·90	15·20	16·70	14·90	14 95	21·95	57·45	36 60
August	17·03	16·09	15·90	15·46	16·52	14·90	15·95	21·95	54·75	36·60
September	18·05	15·90	15·90	16·15	16·65	14·90	16·85	22·26	48·03	36·60
October	19·53	15·90	15·44	17·80	16·60	14·84	16·95	24·08	37·25	36·60
November	19·90	15·82	15·00	18·02	16·02	14·59	17·51	30·15	37·25	36·60
December	19·90	15·90	15·03	18·15	15·77	14·70	19·65	35·58	37·25	36·60

*From the *Iron Age*.

Average Monthly Price of Local No. 2 Foundry Pig-Iron at Chicago.*

(At Furnace) per Gross Ton (2,240 Lbs.).

—	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.
	$	$	$	$	$	$	$	$	$	$
January	17·35	19·00	15·50	14·00	17·90	13·75	13·00	18·50	30·00	33·00
February	16·75	19·00	15·50	14·00	17·31	14·00	13·00	18·50	32·00	33·00
March	16·50	18·30	15·50	14·00	17·25	14·25	12·95	18·70	36·00	33·00
April	16·50	17·50	15·00	14 00	17·00	14·25	13·00	19·00	39·25	33·00
May	16·50	17·06	15·00	14·50	16·00	14·06	13·00	19·00	43·80	33·00
June	16·50	16·75	15·00	14·50	15·62	13·69	13·00	19·00	51·00	33·00
July	17·00	16·50	14·87	14·70	14·70	13·75	13·00	19·00	55·00	33·00
August	17·13	16·50	14·50	15·37	15·00	13·69	13·44	18·40	55·00	33·00
September	18·70	16·40	14·50	16·00	15·00	13·25	13·90	18·13	54·67	33·00
October	19·00	16·06	14·46	17·00	15·00	12·94	14·63	19·63	33·00	34·00
November	19·00	16·00	14·09	17·75	14·87	12·56	17·13	25·80	33·00	34·00
December	19·00	16·00	14·00	18·00	14·60	13·00	18·10	29·50	33·00	34·00

*From the *Iron Age*, New York.

The production of blast furnace pig-iron in Nova Scotia in 1918 was 415,870 tons as against 472,147 tons in 1917 and with the exception of the year 1914 was the smallest production in this Province since 1911. In Ontario the production of blast furnace pig-iron was 747,650 tons as against 684,642 tons in 1917 and was the largest production made in this Province.

Pig-iron was made from scrap in electric furnaces in three provinces; 7,449 tons in Quebec and 24,582 tons in Ontario and British Columbia, the production in the latter Province being a little over 2,000 tons.

By grades the 1918 production included: Basic, 966,409 tons; Bessemer, 15,415 tons; foundry and malleable, etc., 181,696 tons; low phosphorus iron (electric furnace), 32,031 tons. The 1917 production included : Basic, 961,656 tons; Bessemer, 14,092 tons; foundry and malleable, 181,041 tons; low phosphorus (electric furnace), 13,691 tons.

The quantities of ores, fuels and flux charged to blast furnaces during the past ten years is shown in the following table. In 1918 about 95·6 per cent of the ore charged, 60·5 per cent of the coke, and a large proportion of the limestone, were imported. Previous to 1896 the entire Canadian pig-iron production was from Canadian ores but since that date increasing quantities of imported iron ore have been used.

The iron industry at Sydney and North Sydney has been built up on the basis of the Newfoundland Wabana ores and the local coal supply, while in recent years a portion of the limestone required has also been obtained from Port au Port, Newfoundland. In Nova Scotia, therefore, while the fuel is all domestic, the ore is practically all imported, though from a British colony.

In Ontario large quantities of United States "Lake ores" are used. All the fuel used, with the exception of a small quantity of charcoal is imported either as coke, or as coal for charging the by-product coke ovens at Sault Ste-Marie. A portion of the limestone flux is also obtained from quarries situated in the United States. In 1918, Ontario furnaces used 1,392,373 tons of imported ores and 96,745 tons Canadian ores, the percentage being 93·5 per cent imported and 6·5 per cent Canadian. In 1917, Ontario furnaces used 1,210,097 tons of imported ores and 92,065 tons of Canadian ores, the percentage being 93 per cent imported and 7 per cent Canadian. In 1916, 1,050,404 tons of imported ore, or 82·6 per cent of the total, and 221,273 tons of Canadian ores, or 17·4 per cent of the total, were charged. In 1915, 623,094 tons of imported ore, or 68 per cent of the total, and 293,305 tons or 32 per cent of Canadian ores were charged.

Iron Ore, Fuel, and Flux charged to Blast Furnaces.

Calendar Year.	Iron Ore charged.		Fuel charged.			Limestone.
	Canadian.	Imported.	Charcoal.	Coke from Canadian Coal.	Coke Imported or made from Imported Coal.	
	Short tons.	Short tons.	Bushels.	Short tons.	Short tons.	Short tons.
1908	209,266	1,051,445	1,121,990	492,076	325,670	483,065
1909	231,994	1,235,000	1,779,258	412,016	507,255	526,076
1910	149,505	1,377,035	1,615,919	491,281	476,838	569,355
1911	67,434	1,628,368	1,960,459	543,933	577,388	625,216
1912	71,588	2,019,165	1,886,748	609,183	656,815	705,613
1913	139,436	2,110,828	2,206,191	710,260	706,888	630,119
1914	182,964	1,324,326	920,045	330,269	590,902	447,641
1915	293,305	1,463,488	1,314,957	578,743	486,022	573,743
1916	221,773	1,964,598	1,843,209	712,715	645,438	701,390
1917	92,065	2,064,231	1,288,390	634,962	723,657	760,826
1918	96,745	2,146,995	.....	561,135	861,522	755,660

Iron Blast Furnaces in Canada in 1918.

Of 20 furnaces, 15 were in blast in 1918 for varying periods of time. The total daily capacity of the 20 furnaces was about 4,890 gross tons. The operating companies, with numbers and capacities of furnaces, were as follows:—

Dominion Iron & Steel Co., Sydney, C.B.: Six completed furnaces; one of 350 tons capacity and five of 250 tons capacity each per day; three operated practically throughout the year; one for 337 days and one for 40 days; one furnace idle throughout the year.

Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S: Two stacks and one set of stoves at Sydney Mines, C.B., of 250 tons capacity; operated throughout the year.

Londonderry Iron & Mining Co., Ltd., Londonderry, N.S. (in liquidation): One furnace of 100 tons capacity idle throughout the year; not operated since 1908.

Midland Iron & Steel Co., Ltd., Midland, Ont.: Taking over Midland blast furnace plant of Canada Iron Foundries, Ltd., of Montreal, Que. One furnace of 130 tons capacity at Midland, Ont., operated 82 days.

Standard Iron Co., Ltd., Deseronto, Ont.: One furnace at Deseronto with a daily capacity of 55 tons, operated 312 days; one furnace of 65 tons at Parry Sound, idle throughout the year, not operated since 1913—sold to and being re-built by the Parry Sound Iron Co., Ltd., Midland.

The Steel Company of Canada, Ltd., Hamilton, Ont.: Two furnaces, one of 260 tons capacity, operated for 313 days, a second furnace of 430 tons capacity operated 365 days.

Algoma Steel Corporation, Ltd., Sault Ste. Marie, Ont.: Four furnaces at Steelton, near Sault Ste. Marie, two of 300 tons capacity each; one of 500 tons and one of 400 tons. No. 1 in blast 365 days; No. 2, 309 days; No. 3, 281 days and No. 4, 278 days.

The Atikokan Iron Co., Ltd., Port Arthur, Ont.: One furnace of 175 tons capacity idle throughout the year, not operated since 1911.

The Canadian Furnace Co., Ltd., Port Colborne, Ont.: One furnace of 325 tons capacity operated 365 days in 1918.

Electric Furnace Plants making Pig-Iron from Scrap Metal, Chiefly Steel Turnings.

Fraser, Brace & Co., Ltd.: Furnace plant at Shawinigan Falls, Que.: One single phase 6-ton non-tilting furnace.

Electro Foundries, Ltd., Orillia: One 6-ton three phase type non-tilting electric furnace.

Wm. Kennedy & Sons, Collingwood: One 4½-ton three phase non-tilting electric furnace.

Turnbull Electro Metals, L[illegible]., St. Catharines, Ont.: One 6-ton three phase non-tilting electric furnace.

British Forgings, Ltd., Toronto, Ont.: An electric steel furnace plant comprising two 6-ton Heroult furnaces some of which were used for the production of pig-iron during a portion of 1917 and 1918.

Tivani Electric Steel Co., Ltd., Belleville, Ont.: This electric steel plant which includes three small furnaces was operated for the production of ferro-molybdenum during 1917, but in March 1918, began the production of pig-iron.

Bowmanville Foundry Co., Ltd., Bowmanville, Ont.: One ¼-ton Gronwall Dixon electric furnace.

Hull Iron & Steel Foundries, Hull, Que.: One 6-ton three phase tilting type electric furnace—first production in April 1918.

Electric Smelting Co. of Brantford, Ltd., Hull, Que.: One 4-ton electric furnace—first production in June 1918.

Columbia Iron & Steel Co., Ltd., Port Moody, B.C.: One 6-ton Heroult electric furnace—first production in May 1918.

Tudhope Electro-Metals, Ltd., Vancouver, B.C.: One 5-ton stationary three phase electric furnace, first operated Dec. 29, 1918.

Ferro-Alloy Production.

The production of ferro-alloys in Canada in 1918, chiefly ferro-silicon but including also spiegeleisen, ferro-molybdenum, and ferro-phosphorus, all with the exception of the spiegeleisen being made in electric furnaces, reached a total of 44,704 tons valued at $4,731,521. In 1917 the production was 43,465 tons, valued at $3,549,814. The ferro-silicon production during the past two years includes a small tonnage of low grade ferro-silicon recovered as a by-product in the manufacture of abrasives from bauxite in electric furnaces.

The total production in 1916 which included only ferro-silicon, ferro-molybdenum and ferro-phosphorus made in electric furnaces, was 28,628 tons, valued at $1,777,615, as against 10,794 tons, valued at $753,404 in 1915; 7,524 tons, valued at $478,355 in 1914, and 8,075 tons, valued at $493,018 in 1913. In 1912 the production was 7,834 tons, valued at $465,225 and in 1911, 7,507 tons, valued at $376,404.

Ferro-Alloy Plants in 1918.

Canadian Ferro-Alloys, Ltd., Shawinigan Falls, Que.: One 1½-ton stationary type electric furnace producing 50% ferro-silicon.

Leaside Munitions Company, Ltd., Beaupre, Que.: Three stationary type electric furnaces with capacity of 10 gross tons per 24 hours each producing 50% and 85% ferro-silicon.

Electro-Metals, Ltd., Welland, Ont.: Plant includes 8 electric furnaces producing ferro-silicon of 25%, 50%, 75%, and 85% grades.

Tivani Electric Steel Co., Ltd., Belleville, Ont.: Small electric furnaces comprising three units of two furnaces each making ferro-molybdenum in 1917 and for a few months only in 1918.

International Molybdenum Co., Ltd., Orillia, Ont.: Two small electric furnaces producing ferro-molybdenum in 1917 and for a few months only in 1918.

Algoma Steel Corporation, Sault Ste. Marie, Ont.: Producing spiegeleisen in blast furnace.

The following firms were also recovering low grade ferro-silicon as a by-product in the manufacture of artificial abrasives in electric furnaces from bauxite:—

D. A. Brebner, Ltd., Hamilton, Ont.
National Abrasive Co., Niagara Falls, Ont.
The Exolon Company, Thorold, Ont.
The Norton Company, Chippewa, Ont.
The Canadian Aloxite Co., Niagara Falls, Ont.

Exports and Imports of Pig-Iron.

The exports of pig-iron during 1918 were reported as 2,130 tons valued at $169,495, or an average of $79.58 per ton as against exports during 1917 of 12,081 tons valued at $423,814, or an average of $35.08 per ton. The exports of ferro-alloys during 1918 were 23,781 tons valued at $2,671,434, or an average of $112.33 per ton as compared with exports during 1917 of 33,212 tons valued at $2,616,924, or an average of $78.79 per ton. The pig-iron exported during 1918 mainly comprised electric furnace production of low phosphorus iron.

The exports between 1905 and 1913 did not exceed 10,000 tons in any one year, and consisted largely, if not entirely, of ferro-alloys. During 1914, however, there was a small export of pig-iron, chiefly from Sydney to Philadelphia. The exports during the first three months of the year were 4 431 tons, which probably included about 4,000 tons of pig-iron. From the first of April the exports were separately classified and during the last nine months of the year included 9,767 tons of pig-iron valued at $118,111, or an average of $12.09 per ton, and 4,865 tons of ferro-alloys valued at $285,221, or an average of $58.63 per ton.

Annual Exports of Pig-Iron and Ferro-alloys, 1915-18.

Calendar Year.	Pig-iron.			Ferro-alloys.		
	Short tons.	Value.	Average value.	Short tons.	Value.	Average value.
		$	$		$	$
1915	17,307	231,551	13·38	9,238	537,081	58·14
1916	23,304	374,383	16·07	22,802	1,352,013	59·29
1917	12,081	423,814	35·08	33,212	2,616,924	78·79
1918	2,130	169,495	79·58	23,781	2,671,434	112·33

The imports of pig-iron during 1918 as shown by the Canadian Customs records, were 67,396 tons valued at $2,102,406, or an average of $31.19 per ton, and the imports of ferro-alloys were 35,284 tons valued at $4,283,133 or an average of $121.39 per ton, making a total of 102,680 tons valued at $6,385,539.

Of the total imports of pig-iron in 1918, 67,385 tons valued at $2,101,798 were derived from the United States, and of the total imports of ferro-alloys 25,168 tons valued at $2,315,046 originated in the United States. The total imports of pig iron and ferro-alloys from the United States were thus 92,553 tons valued at $4,416,844.

As against this record the United States Department of Commerce shows exports to Canada during the same period of pig-iron and ferro-alloys amounting to 122,325 gross tons (137,004 short tons) valued at $5,661,228, a quantity considerably higher than the Canadian record.

The total imports of pig-iron and ferro-alloys during 1917 were 96,218 tons valued at $4,793,492 of which amount 91,809 tons valued at $4,206,265 were credited to the United States. The United States Department of Commerce trade records on the other hand show exports to Canada of the same products amounting to 171,147 short tons, valued at $6,279,651.

Previous to 1907 the annual imports of pig-iron varied from less than 20,000 tons to nearly 100,000 tons per annum. In 1907, however, the imports exceeded 250,000 tons and during each of the years from 1910 to 1913 inclusive, the imports exceeded 200,000 tons.

The annual imports of ferro-alloys during the past few years have varied between 11,000 tons and 35,000 tons, having reached a maximum in 1915.

Annual Imports of Pig-Iron showing Country of Origin.

Calendar Year.	United States.			Great Britain.			Other Countries.		
	Short tons.	Value.	Value per ton.	Short tons.	Value.	Value per ton.	Short tons.	Value.	Value per ton.
1906..	26,434	$ 448,794	$ 16 98	30,574	$ 414,116	$ 13 54	335	$ 8,705	$ 25 99
1909..	50,167	735,138	14·65	87,394	1,055,799	12 08	364	7,255	19 93
1910..	107,984	1,516,685	14·05	119,678	1,603,951	13 40	91	2,059	22·63
1911..	122,360	1,552,896	12·69	86,125	1,058,078	12 29	2	15	7·50
1912..	210,756	2,590,117	12 [illegible]	61,809	912,482	14·76	.....	.....	.....
1913..	213,960	2,888,974	13 [illegible]	22 800	358,431	15·72	.....	.....	.....
1914..	69,254	862,598	12·46	9,426	119,591	12·68	.....	.....	.....
1915..	46,894	615,268	13·12	588	8,932	15·19	.....	.....	.....
1916..	57,256	1,129,799	19·73	594	10,614	17·87	280	4,737	16·91
1917..	83,250	2,789,752	33·15	.....	.....	.....	140	3,750	26·78
1918..	67,385	2,101,798	31·19	11	698	55 27	.....	.....	.....

Annual Imports of Pig-Iron since 1907.

Year.	Pig-iron.			Charcoal Pig-iron.			Total.	
	Short tons.	Value.	Average value.	Short tons.	Value.	Average value.	Short tons.	Value.
		$	$		$	$		$
1907.....	249,582	4,117,887	16·50	2,062	41,806	20 27	251,644	4,159,693
1908.....	57,343	871,615	15·20	1,022	18,818	18·41	58,365	890 43
1909.....	137,925	1,798,192	13·04	413	5,727	13·87	138,388	1,80[illegible]
1910.....	227,753	3,122,695	13·71	16,106	242,152	15·03	243,859	3,3[illegible]
1911.....	208,487	2,610,989	12·52	.....	.....	.....	208,487	2,61[illegible]
1912.....	272,565	3,511,599	12·88	115	1,370	11·91	272,680	3,5[illegible]
1913.....	235,843	3,234,877	13·72	926	12,528	13·53	236,769	3,247 405
1914.....	78,594	981,107	12·48	86	1,082	12·58	78,680	982,189
1915.....	47,482	624,200	13·15	.....	.....	.....	47,482	624,200
1916.....	57,337	1,128,557	19·68	793	16,593	20·92	58,130	1,145,150
1917.....	82,758	2,744,055	33·16	632	19,447	30·77	83,390	2,763,502
1918.....	67,396	2,102,406	31·19	.....	.....	.....	67,396	2,102,406

Imports of Ferro-Manganese, Ferro-Silicon, etc.

Calendar year.	Short tons.	Value.	Average value.	Calendar year.	Short tons.	Value.	Average value.
		$	$ cts.			$	$ cts.
1907.....	15,437	536,285	34 74	1913.....	30,355	990,443	30 98
1908.....	11,718	401,761	34 29	1914.....	22,147	549,485	27 81
1909.....	17,699	411,536	23 25	1915.....	13,758	807,312	58 68
1910.....	18,900	464,741	24 59	1916.....	14,777	1,879,538	127 19
1911.....	17,226	429,458	24 93	1917.....	12,828	2,029,990	158 25
1912.....	19,810	469,884	23 72	1918.....	35,284	4,283,133	121 39

Imports of Ferro-Alloys, 1918.

—	Great Britain.		United States.		Other Countries.		Total.	
	Tons	Value $	Tons	Value $	Tons	Value $	Tons	Value $
Ferro-silicon containing not more than 15 per cent silicon			345·2	$22,300			345·2	$22,300
Ferro-silicon containing more than 15 per cent silicon			0·6	225			0·6	225
Spiegeleisen and ferro-manganese containing over 15 per cent manganese	9,845	1,801,568	23,977	1,913,284	225	29,130	34,023	3,743,982
Spiegeleisen and ferro-manganese containing not more than 15 per cent manganese, and other ferro-products, n.o.p.	45·6	137,389	869·5	379,328			915·1	516,717
	9,890·6	1,938,957	25,193·3	2,315,046	225	29,130	35,287·9	4,283,133

Imports of Ferro-Alloys, 1917.

—	Great Britain.		United States.		Total.	
	Tons	Value. $	Tons	Value. $	Tons	Value. $
Ferro-silicon containing not more than 15 per cent silicon			1,243·3	$50,067	1,243·3	$50,067
Ferro-silicon containing more than 15 per cent silicon			7·6	2,136	7·6	2,136
Spiegeleisen and ferro-manganese containing over 15 per cent manganese	4,144	566,358	6,728	863,733	10,872	1,430,091
Spiegeleisen and ferro-manganese containing not more than 15 per cent manganese, and other ferro-products, n.o.p.	128·3	17,119	577·3	530,587	705·6	547,706
	4,272·3	583,477	8,556·2	1,446,513	12,828·5	2,029,990

The total quantity of pig-iron and ferro-alloys used in Canada arrived at by adding to the production the excess of imports over exports amounted in 1918 to 1,316,025 tons, as against 1,264,870 tons, in 1917, and 1,224,686 tons in 1916. Of the total amount consumed in 1918, 942,234 tons are reported as having been used in steel furnaces, leaving 373,791 tons credited to foundry and other uses. The consumption in steel furnaces included 897,537 tons of pig-iron and 44,697 tons of ferro-alloys.

The annual consumption since 1910 compiled upon the same basis is shown in the following table.

Consumption of Pig-Iron and Ferro-alloys.

Year.	Used in steel furnaces.		Credited to foundry and other uses.	Total consumption.* Short tons.
	Pig-iron.	Ferro-alloys.		
1910	690,913	8,143	361,914	1,060,970
1911	700,679	21,359	422,847	1,144,885
1912	735,559	24,237	548,024	1,307,820
1913	913,722	29,408	454,710	1,397,840
1914	619,030	20,252	233,170	872,452
1915	748,114	13,941	197,199	959,254
1916	949,444	25,940	249,302	1,224,686
1917	1,112,082	34,779	118,009	1,264,870
1918	897,537	44,697	373,791	1,316,025

* Production of pig-iron and ferro-alloys plus excess of imports over exports.

Bounties.—A further attempt was made in 1918 to stimulate the production of pig-iron by means of bounty payments, though the assistance offered applies only to British Columbia.

The following Act received the sanction of the Provincial Government:—

"An Act respecting Bounties on Iron produced in the Province", (Assented to 23rd April, 1918.)

"His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia enacts as follows:—

1. This Act may be cited as the "Iron Bounties Act".

2. The Lieutenant-Governor in Council may enter into an agreement with any person, persons, or corporation whereby the Province will pay to such person, or persons, or corporation, out of the Consolidated Revenue Fund, bounties on pig-iron when manufactured within the Province, as follows:—

(a) In respect of pig-iron manufactured from ore, on the proportion produced from ore mined in the Province, a bounty not to exceed three dollars per ton of two thousand pounds:

(b) In respect of pig-iron manufactured from ore, on the proportion produced from ore mined outside the Province, a bounty not to exceed one dollar and fifty cents per ton of two thousand pounds.

3. Bounty, as on pig-iron under this Act, may be paid upon the molten iron from ore which in the electric furnace, Bessemer or other furnace enters into the manufacture of steel by the process employed in such furnace; the weight of such iron to be ascertained from the weight of the steel so manufactured.

4. The Minister of Mines shall be charged with the administration of this Act.

5. The Lieutenant-Governor in Council may make regulations to carry out the intent of this Act.

6. No bounty shall be paid under the provisions of this Act in respect of iron or steel manufactured after the thirty-first day of December, 1923."

No bounty on production was offered by the Dominion Government but because of the restriction on exports from the United States and the war necessity for an increased supply of pig-iron the War Trade Board was authorized by the Government under authority of Order-in-Council P.C. 1187 approved on the 18th of May, 1918. "To enter into communication with responsible parties for the rehabilitation of dormant blast furnaces and the construction of new undertakings for the production of pig-iron in Canada on the basis of a government guarantee for the purchase of their product for a series of years and at such reasonable prices as may be agreed upon and that a report thereon be made to the Government with the least possible delay".

Agreements were subsequently entered into with two firms for the re-building and operation of the dormant blast furnace plants at Midland and Parry Sound respectively. This form of assistance was, however, entirely a war measure and has been terminated in August of 1919.

Bounties were formerly paid by the Dominion Government during the years 1896 to 1912 inclusive, the total payments on account of iron and steel produced having been $16,785,827 of which $7,097,041 was paid on pig-iron; $113,674 on puddled iron bars; $6,706,990 on steel; and $2,868,122 on manufactures of steel. The last bounty Acts were Chapter 24, Statutes of Canada 1907 and Chapter 33, Statutes of Canada 1910. (For copies see Annual Report on Mineral Production of Canada 1910).

STEEL.

The production of steel during 1918 was reported from 27 separate plants (including 8 electric furnace plants) operated by 24 companies, being the same number of plants as were active in 1917.

The total production of steel ingots and direct steel castings during 1918 was 1,873,708 short tons (1,672,946 gross tons) as compared with 1,745,734 short tons (1,558,691 gross tons) in 1917. The 1918 production was more than double that of 1914.

The 1918 production included open-hearth steel 1,746,334 tons; electric steel 119,130; crucible and converter steels 8,244 tons. In 1917 the open-hearth production was 1,685,715 tons; electric steel 50,467 tons; crucible and converter steels 9,552 tons. In 1916 the open-hearth production was 1,400,883 tons; electric steel 19,639 tons; Bessemer, crucible, and other steels 7,727 tons.

The production of electric steel in 1915 was 5,625 tons, and in 1914 the first year for which a production was reported, 61 tons.

The total production of pig-iron, ferro-alloys, and steel in electric furnaces in 1918 was 191,869 tons as against a corresponding production in 1917 of 101,031 tons.

Statistics of the production of steel ingots and direct steel castings since 1894 are given in the following table. The figures for 1894 to 1906 inclusive have been collected and published by the American Iron and Steel Association, those for the years 1907 to 1918 have been collected by this Department.

Annual Production of Steel Ingots and Castings.

(In short tons.)

Year.	Steel Ingots.				Steel Castings.			Total ingots and castings.
	Open-hearth.	Bessemer.	Electric and other steels.	Total ingots.	Open-hearth.	Electric and other steels.	Total castings.	
1894								28,767
1895								19,040
1896								17,920
1897								20,608
1898								24,125
1899								24,640
1900								26,406
1901								29,214
1902				197,959			5,922	203,881
1903				198,249			5,047	203,296
1904				159,352			7,286	166,638
1905				441,342			10,521	451,863
1906				622,623			16,773	639,396
1907	459,240	225,989		685,229	20,602	1,151	21,753	706,982
1908	443,442	135,557		578,999	9,051	713	9,764	588,763
1909	535,988	203,715		739,703	14,013	1,003	15,016	754,719
1910	580,932	222,668		803,600	18,085	599	18,684	822,284
1911	651,676	209,817		861,493	20,163	740	20,903	882,396
1912	692,236	231,044		923,280	31,845	2,556	34,401	957,681
1913	824,818	301,932		1,126,750	39,217	3,026	42,243	1,168,993
1914	608,383	203,184		811,567	15,315	1,759	17,074	828,641
1915	962,411	19,448	7,970	989,829	28,384	2,683	31,067	1,020,896
1916	1,377,387	1,416	18,900	1,397,703	23,496	7,050	30,546	1,428,249
1917	1,642,085		49,206	1,691,291	43,630	10,813	54,443	1,745,734
1918	1,684,317		115,854	1,800,171	62,017	11,520	73,537	1,873,708

Materials Charged to Steel Furnaces:—The total quantity of pig-iron used in steel furnaces during 1918 was 897,537 tons of which 818,394 tons were produced by the firms reporting and 79,143 tons purchased. The quantity of ferro-alloys used was 44,697 tons, which included 8,720 tons of ferro-silicon and 35,977 tons of ferro-manganese and spiegeleisen. The total quantity of scrap iron and steel used was 1,068,434 tons of which 515,302 tons originated with the firms reporting and 553,132 tons were reported as purchased.

Ores used included 59 tons of manganese ore and 48,599 tons of iron ore, while 243,383 tons of limestone and dolomite were used and 17,307 tons of fluorspar.

In 1917 the quantity of pig-iron used, 1,112,082 tons included 993,805 tons produced by the firms reporting and 118,277 tons purchased. The scrap iron and steel used, 1,022,456 tons, included 527,400 tons originating with the firms reporting and 495,056 tons reported as purchased.

A record of materials used in steel furnaces covering the past nine years is shown in the following table:—

Pig-Iron, Scrap Iron, and other Materials Charged to Steel Furnaces.

(In short tons.)

Year.	Pig-iron.	Ferro-alloys.	Scrap Iron and Steel.	Iron Ore.	Manganese Ore.	Fluorspar.	Limestone and Dolomite.
1910	690,913	8,143	211,453	39,332	1,317	7,461	144,110
1911	700,769	21,359	278,797	42,892	829	8,067	130,270
1912	735,559	24,237	336,265	43,006	985	9,709	148,045
1913	913,722	29,408	406,403	55,018	1,342	10,687	197,028
1914	619,030	20,252	286,863	37,686	723	7,845	114,859
1915	748,114	13,941	413,266	74,872	908	13,520	252,045
1916	949,444	25,940	469,162	55,059	1,578	13,213	224,772
1917	1,112,082	54,779	1,022,456	39,793	2,726	17,084	231,563
1918	897,537	44,697	1,068,434	48,599	59	17,307	243,383

The tabulated statement shows the increasing quantities of scrap metal used in the production of steel. In 1918 much more than half the iron charged to the furnaces was in the form of scrap metal. For each 100 tons of pig-iron used in 1918 the quantity of scrap charged was 119 tons. In 1917 the quantity of scrap used was 91 tons to each 100 tons of pig-iron and in the two preceding years the ratios were 55·2 tons and 46·3 tons respectively.

The exports of scrap-iron and steel in 1918 are reported as 51,545 tons valued at $853,097, or an average of $16.55 per ton, as against exports in 1917 of 176,571 tons valued at $2,300,022, or an average of $13.02 per ton, and exports in 1916 of 114,300 tons valued at $1,357,018, or an average of $11.87 per ton.

From 1900 to 1912 the annual exports of scrap varied considerably, the lowest being 4,208 tons in 1911 and the highest 24,109 tons in 1905. During the past six years the exports have greatly increased.

The total imports of scrap-iron and scrap-steel in 1918 are reported as 57,189 tons valued at $775,526, or an average of $13.56, as against imports in 1917 of 20,654 tons valued at $454,079, or an average of $21.99 per ton, and imports in 1916 of 11,574 tons valued at $179,751, or an average of $15.53 per ton.

In 1913 the imports exceeded 100,000 tons and during the preceding 20 years' the imports varied from 8,000 tons to 70,000 tons per annum.

Tabulated records of the exports and impor of scrap-iron and steel were published in the report on production of iron and steel 1916.

Finished Rolled Iron and Steel.

Production of Finished Rolled Products, 1895-1912.

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1895	66,402	1901	112,007	1907	600,179
1896	75,043	1902	161,485	1908	496,517
1897	77,021	1903	129,516	1909	662,741
1898	90,303	1904	180,038	1910	739,811
1899	110,642	1905	385,826	1911	781,924
1900	100,690	1906	571,742	1912	861,224

Production of Finished Rolled Forms by Leading Products.

Products.	1913.	1914.	1915.	1916.	1917.	1918.
Rails	506,709	382,344	209,752	81,497	41,349	145,309
Structural shapes, and wire rods	68,048	59,050	114,829	174,490	189,687	141,978
Plates and sheets, nail plate, merchant bars, tie-plate bars, etc..	392,340	218,125	328,737	707,823	745,162	714,021
Total, gross tons	967,097	659,519	653,318	963,810	976,198	1,001,308

Production of Finished Rolled Forms, owing Iron and Steel separately, Gross tons, 1904-1918.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
19	53,188	126,850	180,038	1912	109,012	752,212	861,224
1905	67,421	318,405	385,826	1913	95,881	871,216	967,097
1906	78,898	492,844	571,742	1914	47,309	612,210	659,519
1907	81,093	519,086	600,179	1915	40,797	612,521	653,318
1908	65,505	431,012	496,517	1916	76,478	887,332	963,810
1909	79,636	583,105	662,741	1917	101,795	874,403	976,198
1910	83,918	655,893	739,811	1918	96,296	905,012	1,001,308
1911	86,383	695,541	781,924				

Production of Steel Rails, 1895-1918.

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1895	600	1901	891	1907	311,461	1913	506,709
1896	600	1902	33,950	1908	268,692	1914	382,344
1897	500	1903	1,243	1909	344,830	1915	209,752
1898	600	1904	36,216	1910	366,465	1916	81,497
1899	*835	1905	178,885	1911	360,547	1917	41,349
1900	700	1906	312,877	1912	423,885	1918	145,309

* Includes a few tons of iron rails.

ROLLING MILL PRODUCTION:—Statistics of the production of rolled iron and steel products have been received from all firms operating iron and steel rolling mills in Canada. The principal finished rolled products are steel rails, wire rods and merchant bars with an increasing production of structural shapes, plates and sheets. A large tonnage of rolled blooms and billets is used for forging purposes, while during the past two or three years there has been a small export of rolled slabs, blooms and billets.

The total production in 1918 of finished rolled products (including blooms, billets and axle blanks, rolled for forging purposes, and blooms, billets and slabs rolled for export sale) was 1,164,610 short tons, of which 104,328 tons were rolled iron and 1,060,282 tons rolled steel. The total production of rolled products included steel rails 162,747 net tons, wire rods 154,789 tons; merchant bars and rods and structural shapes 425,017 tons; plates and sheets 26,413 tons; rolled blooms and billets for forging purposes and rolled blooms, billets, or slabs sold for export 395,644 tons.

The annual production of rolling mills in so far as the record has been obtained by this Department is as follows:—

Annual Production of Rolling Mills.

(In short tons.)

Year.	Steel Rails.	Wire Rods.	Bars and Plates.	Other Products.*
1908	300,935	41,420	.....	.....
1909	377,642	81,762	.....	.....
1910	399,762	88,456	128,940	28,354
1911	399,760	85,811	202,023	62,676
1912	471,422	68,174	267,797	36,441
1913	554,481	57,389	269,096	51,654
1914	428,226	63,856	143,754	42,070
1915	232,411	124,381	294,595	34,358
1916	90,123	179,226	619,500	152,668
1917	46,645	195,392	631,389	87,155
1918	162,747	154,789	451,430	(a) 395,644

* Includes forged products, angle splice bars, and rail fastenings.
(a) Products rolled for forging purposes only and blooms, billets or slabs sold for export. All other rolled iron and steel, except rails and wire rods, included with bars and plates.

The record of production of finished rolled iron and steel in Canada, collected and published by the American Iron and Steel Institute and the American Iron and Steel Association, which covers a longer period of time and is possibly more complete than that given above, is shown in the following tables quoted from the Annual Statistical Report of the American Iron and Steel Institute for 1918.

STEEL BILLETS:—Canadian steel billets were not quoted on the Montreal market during 1918. In Pittsburgh the fixed price of $47.50 continued until November. December average was $2 per ton less.

Monthly Prices of Mild Steel Billets at Montreal.*

——	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
January	26 00	26 50	27 00	24 75	26 50	24 50	24 75	39 50	53 50	**
February	26 00	26 50	27 00	23 75	30 00	24 50	24 75	39 50	53 50	
March	26 25	26 50	27 00	23 75	30 00	24 50	26 50	45 50	53 50	
April	26 25	26 50	27 00	23 75	30 00	25 25	26 50	34 50	60 00	
May	26 25	26 50	26 75	23 75	31 00	25 25	26 50	44 50	**	
June	26 50	26 00	25 75	23 75	31 00	25 25	26 50	44 50		
July	26 50	26 00	25 75	23 75	29 00	25 25	26 50	44 50		
August	26 50	25 75	25 00	24 25	29 00	25 25	29 50	44 50		
September	26 25	25 50	25 00	24 75	28 00	25 25	31 00	44 50		
October	26 25	25 50	22 75	25 25	26 50	25 25	31 00	46 00		
November	26 25	24 75	23 75	25 25	25 50	24 75	32 00	52 00		
December	26 50	25 00	24 75	26 00	25 50	24 75	34 00	53 50	**	**
Average	26 29	25 91	25 71	24 40	28 50	25 23	28 29	45 08		

*Average price per ton of 2,240 pounds, f.o.b. Montreal in the first week of each month, quotations supplied by the Dominion Iron & Steel Co., Ltd.
**No quotations.

Average Monthly Prices of Bessemer Steel Billets at Pittsburgh,* per gross ton.

——	1908	1909	1910	1911	1912	1913	1914.	1915.	1916.	1917.	1918.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
January	28 00	25 00	27 50	23 00	20 00	28 30	20 13	19 25	32 00	63 00	47 50
February	28 00	25 00	27 50	23 00	20 00	28 50	21 00	19 50	33 50	65 00	47 50
March	28 00	23 00	27 50	23 00	19 75	28 50	21 00	19 70	42 40	66 25	47 50
April	28 00	23 00	26 75	23 00	20 00	28 50	20 80	20 00	45 00	73 75	47 50
May	28 00	23 00	26 12	22 60	20 80	27 37	20 00	20 00	45 00	86 00	47 50
June	25 75	23 00	25 30	21 00	20 87	26 50	19 50	20 50	43 50	98 75	47 50
July	25 00	23 50	25 00	21 00	21 50	26 60	19 00	21 38	41 00	100 00	47 50
August	25 00	24 13	24 62	21 00	22 12	26 00	20 25	23 13	44 20	86 00	47 50
September	25 00	25 00	24 40	20 75	23 62	24 87	21 00	24 10	45 00	66 25	47 50
October	25 00	26 25	23 75	20 00	26 00	23 30	20 00	24 63	46 25	49 38	47 50
November	25 00	27 13	23 30	19 50	27 00	21 00	19 25	26 50	52 00	47 50	47 50
December	25 00	27 50	23 00	19 25	27 00	20 00	19 00	30 60	57 50	47 50	45 50

*As compiled and published by *The Iron Age*, New York.

The exports of steel in the form of "billets, blooms and ingots" were in 1918, 61,782 tons valued at $2,645,943, or an average of $42.83 per ton, as against exports during the nine months ending December 1917, of 41,558 tons valued at $1,831,917, or an average of $44.08 per ton.

There has been a considerable annual importation, as shown in the accompanying tables, of iron and steel billets, and of iron and steel ingots, blooms, slabs, puddled bars, etc. The export records of the United States appear to show considerably larger exports of these products to Canada than is included in the Canadian record, a difference which may be due to the inclusion in the Canadian record, under a general item, of considerable quantities of material, free of duty, for the use of the Imperial Government.

According to the United States record[1], there was exported from that country to Canada during the calendar year 1918, billets, ingots and blooms of steel, 247,332 gross tons (277,012 short tons) valued at $19,787,779, or an average of $80 per gross ton. In 1917 the corresponding exports to Canada were 150,533 gross tons (168,597 short tons) valued at $11,962,280, or an average of $70.95, per short ton and in 1916, 105,260 gross tons (117,891 short tons) value at $6,657,538, or an average of $56.43 per short ton.

[1]Monthly Summary of Foreign Commerce of the United States, Department of Commerce, Washington, D.C.

Imports of Iron and Steel Ingots, Blooms, Billets, etc.

Fiscal Year.	Iron and steel billets weighing not less than 60 pounds per lineal yard.			Iron or steel ingots, cogged ingots, blooms, slabs, puddled bars and loops, or other forms, n.o.p., less finished than iron or steel bars, but more advanced than pig-iron, except castings.			Steel billets, n.o.p.			Total.	
	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.	Short tons.	Value.
		$	$ cts.		$	$ cts.		$	$ cts.		$
1908	14,866	416,163	27 99	4,722	135,177	28 63	1,634	48,672	29 79	21,222	600,012
1909	3,940	95,350	24 20	3,715	53,135	14 30	1,232	31,869	25 86	8,887	180,354
1910	28,358	518,102	18 27	5,775	97,333	16 85	2,682	63,089	23 52	36,815	678,524
1911	44,457	861,036	19 37	3,228	68,6[illegible]	21 26	711	19,940	28 05	48,396	949,592
1912	85,852	1,593,665	18 56	2,608	[illegible]	19 97	729	17,242	23 65	89,189	1,662,970
Calendar Year.											
1913	51,765	1,178,151	22 76	665	[illegible]	29 61	453	14,784	32 67	52,873	1,212,314
1914	12,247	241,234	19 70	155	[illegible]	21 65	647	15,121	23 37	13,049	259,703
1915	32,210	715,493	22 21	10,980	[illegible]4	28 85	10,928	238,380	21 81	54,118	1,270,687
1916*	12,627	495,625	39 25	7,946	16	47 29	303	14,005	46 24	20,876	895,446
1917*	10,186	663,668	65 15	10,243	71[illegible]8	69 79	348	22,573	64 83	20,777	1,401,149
1918*	2,992	232,065	77 55	374	27,537	73 71	43	2,608	60 79	3,409	262,210

*Import record not complete. See explanation in text.

The second table following shows for a number of years the exports of billets, ingots and blooms of steel from the United States to Canada. The principal difference between this and the Canadian record appears to be for the years 1916, 1917, and 1918. There is also shown in this table a record of the exports from the United States to Canada of steel rails, sheets and plates, structural iron and steel, tin plate, etc., wire and manufactures of wire, pipe and fittings and metal working machinery.

Exports of Various Iron and Steel Products from the United States to Canada.

Calendar Year.	Billets, Ingots and Blooms of Steel.			Steel Rails for Railways.			Sheets and Plates.			Structural Iron and Steel.		
	Short tons.	Value.	Value. per ton.	Short tons.	Value.	Value per ton.	Short tons.	Value.	Value per ton.	Short tons.	Value.	Value per ton.
		$	$ cts.		$	$ cts.		$	$ cts.		$	$ cts.
1910	23,160	461,204	19 91	28,382	750,424	26 44	....	....	....	83,838	3,346,393	39 91
1911	64,020	1,262,732	19 72	98,613	2,499,110	25 34	....	....	....	115,420	4,113,858	35 64
1912	92,976	1,941,015	20 88	149,353	3,799,685	25 44	....	....	....	190,346	6,823,072	35 85
1913	45,568	964,373	21 16	181,408	4,791,559	26 41	356,344	12,364,721	34 70	322,766	10,463,154	32 42
1914	16,044	311,267	19 40	25,949	685,468	26 42	207,203	6,855,494	33 09	125,457	3,454,372	27 53
1915	65,504	1,528,155	23 33	8,521	230,637	27 07	223,715	7,781,270	34 78	110,725	3,063,382	27 67
1916	117,891	6,657,538	56 43	46,011	1,586,6 9	34 48	255,935	14,712,640	57 49	125,169	5,788,908	46 25
1917	168,597	11,962,280	70 95	54,088	1,815,768	33 57	256,948	25,451,608	99 05	131,383	9,235,063	70 29
1918	277,012	19,787,779	71 43	74,545	3,163,301	42 43	275,444	24,281,654	88 15	124,452	8,211,009	65 98

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Calendar Year.	Tin Plate, Terne Plates and Taggers Tin.			Wire.			Pipe and Fittings.			Metal Working Machinery.
	Short tons.	Value.	Value per ton.	Short tons.	Value.	Value per ton.	Short tons.	Value.	Value per ton.	Value.
		$	$ cts.		$	$ cts.		$	$ cts.	$
1910	12,473	881,719	70 69	47,074	2,077,092	44 12	30,008	1,371,399	45 70	466,216
1911	32,095	2,243,492	69 90	62,895	2,670,765	42 46	40,485	1,853,764	45 79	1,083,718
1912	52,746	3,662,770	69 44	64,354	2,496,781	38 80	86,103	4,288,887	49 81	1,885,241
1913	51,524	3,842,159	74 57	53,749	2,143,449	39 88	79,929	4,093,699	51 22	1,888,463
1914	39,770	2,614,859	65 75	53,254	2,083,150	39 12	....	....	....	767,064
1915	43,854	2,762,405	62 99	51,963	2,159,436	41 56	15,374	954,817	62 10	4,336,065
1916	57,633	4,694,005	81 45	66,690	4,289,572	64 32	22,108	1,717,771	77 70	7,929,989
1917	66,329	9,160,783	138 11	54,547	4,456,359	81 70	21,758	2,469,192	113 49	5,542,853
1918	72,480	11,638,385	160 57	37,580	3,838,233	102 13	15,015	2,073,920	138,12	4,813,823

STEEL RAILS:—The production of steel rails in Canada during 1918 was 162,747 short tons, as against 46,645 short tons in 1917 and 90,123 short tons in 1916. The annual production from 1905 to 1915 varied between 200,000 tons and 560,000 tons per annum.

The exports of steel rails during 1918 were 12,952 tons valued at $575,062, or an average of $44.40 per ton, as against exports during the nine months ending December 1917, of 26,402 tons valued at $1,605,742, or an average value per ton of $60.82. The imports of steel rails as per Canadian Customs records were 7,787 tons valued at $404,417, or an average of $51.93 per ton, as against imports in 1917 of 18,160 tons valued at $689,197, or an average of $37.95 per ton. United States trade records show exports of steel rails to Canada during 1918 of 74,545 tons valued at $3,163,301 or an average of $42.43 per ton and during 1917 exports to Canada of 54,088 tons valued at $1,815,768, or an average of $33.57 per ton. (See preceding table.)

The annual imports of steel rails from 1895 to 1905 ranged between 50,000 tons and 212,000 tons averaging about 125,000 tons. From 1906 to date, however, or since the establishment of the rail mills at Sydney and Sault Ste. Marie, the imports have fallen to an annual average of about 60,000 tons, the variation being between a minimum of 10,420 tons in 1915 and a maximum of 177,041 tons in 1913.

WIRE RODS:—The production of wire rods in Canadian rolling mills in 1918 was 154,789 tons as compared with 195,392 tons in 1917 and 179,226 tons in 1916. From 1908 to 1914 inclusive the average annual production was about 70,000 tons. The imports of wire rods in the coil in 1918 were 42,8[illegible]8 tons valued at $2,416,702, or an average of $56.42 per ton, as compared with i[illegible]orts in 1917 of 55,314 tons valued at $3,536,504, or an average of $63.93 per ton. The annual imports have varied between rather wide limits, having been as high as 55,000 tons in 1902 and less than 10,000 tons in 1908 the highest import having been reached during the fiscal year of 1913 with a total of 91,919 tons.

Annual Imports of Wire Rods.*

Calendar Year.	Short Tons.	Value.	Value per ton.	Calendar Year.	Short tons.	Value.	Value per ton.
		$	$ cts.			$	$ cts.
1913	79,608	1,962,235	24 65	1916	66,166	3,069,162	46 39
1914	65,250	1,472,597	22 57	1917	55,314	3,536,504	63 93
1915	71,839	1,695,842	23 60				

*Rolled iron wire rods in the coil of iron or steel not over ¼ inch in diameter when imported by wire manufacturers for use in making wire in the coil in their own factories.
Rolled round rods in the coil of iron or steel for the manufacture of chains.

Average Monthly Prices of Bessemer Wire Rods at Pittsburgh*, per gross ton.

——	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
January	33 00	33 00	28 00	24 37½	30 00	25 50	25 00	43 00	75 00	57 00
February	33 00	33 00	28 75	25 00	30 00	26 38	25 00	48 00	.....	57 00
March	33 00	33 00	29 00	25 00	30 00	26 50	25 00	54 80	81 00	57 00
April	29 00	32 50	29 00	25 00	30 00	26 00	25 00	60 00	85 00	57 00
May	27 50	32 00	29 00	25 00	30 00	25 50	25 00	60 00	86 00	57 00
June	27 50	30 80	28 25	25 00	29 50	24 50	25 00	53 75	92 50	57 00
July	29 40	29 20	27 00	25 00	28 30	24 50	25 63	55 75	96 25	57 00
August	31 00	28 25	27 00	25 80	28 00	25 00	27 00	55 00	94 00	57 00
September	31 50	28 00	27 00	27 00	27 37½	26 20	29 40	55 00	88 75	57 00
October	31 87½	28 50	26 00	28 50	26 60	25 88	31 75	55 00	77 25	57 00
November	32 50	28 12½	25 30	29 75	25 87½	25 25	36 25	63 00	57 00	57 00
December	33 00	28 00	24 50	30 00	25 17	25 00	39 00	68 75	57 00	57 00

*As compiled and published by *The Iron Age*, New York.

The average monthly price of wire rods in Pittsburgh was fixed by Government order on October 11th, 1917, at $57 per gross ton and this price remained in force throughout 1918.

TIN PLATE:—There has been as yet no production of tin plate in Canada. The imports during 1918 were 72,844 tons valued at $11,403,887, or an average of $156.55 per ton as compared with imports in 1917 of 66,676 tons valued at $9,985,631, or an average of $149.76 per ton. The imports during the past ten years have averaged about 42,500 tons per annum.

A development is now in progress which has as its object the establishment of a tin plate manufacturing industry in Canada. The electric steel furnace plant and buildings of the British Forgings, Ltd., at Toronto have been purchased by Baldwins Canadian Steel Corporation, Ltd., which firm has under construction a mill for the manufacture of steel sheets to include black sheets, galvanized sheets and tin plate. It is anticipated that this plant may be ready for operation toward the middle of 1920.

Annual Imports of Tin Plate.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1909	36,904	2,216,089	1914	50,791	3,151,385
1910	39,101	2,475,010	1915	45,165	2,883,951
1911	47,006	3,172,943	1916	57,543	5,221,163
1912	60,502	3,826,735	1917	66,676	9,985,631
1913	58,031	3,954,615	1918	72,844	11,403,887

Exports and Imports of Iron and Steel Goods.

Canada imports large quantities of iron and steel, much larger quantities than are manufactured in domestic steel mills. Reference has already been made to exports and imports of a few specific products; the following, however, is a general summary of the available records relating to exports and imports of iron and steel as compiled from the reports of the Customs Department. Mention has already been made of the fact that some of these records such as imports of billets, steel rails, and pig-iron, are apparently incomplete. It is assumed that considerable quantities of these products have been imported by and for the use of the Imperial Government as munitions of war and entered under a special item of the Custom classification to cover such imports instead of under the usual classification. This fact should be kept in mind in analysing the situation, since it may explain a number of apparent discrepancies between these records and those available from other sources, such, for instance, as the United States Department of Commerce records of Foreign Trade.

The exports of iron and steel from Canada have consisted chiefly of manufactured goods, such as agricultural implements, automobiles, bicycles, machinery, etc. During the past two years, however, there have been considerable exports of steel rails, billets, rods and wire products.

The total recorded value of iron and steel exported during the calendar year 1918, was $54,764,742, as compared with a value of exports in 1917 of $46,791,681.

The exports in 1918 included: pig-iron and ferro-alloys, 25,911 tons valued at $2,840,929; scrap-iron and steel, 51,545 tons valued at $853,097; wire and wire nails valued at $6,294,195; billets, bars, rods and rails, 180,019 tons valued at $13,533,662; agricultural implements valued at $5,684,770; automobiles and bicycles, $6,092,572; other manufactures of iron and steel, $19,465,517.

The exports during 1917 included: pig-iron and ferro-alloys, 45,293 tons valued at $3,040,738 ; scrap-iron and steel, 176,591 tons valued at $2,300,022; wire and wire nails, 105,482 tons valued at $9,823,700; billets, bars, rods and rails during the last nine months of the year, 109,281 tons valued at $7,071,446;

agricultural implements valued at $5,430,906; automobiles and bicycles, $6,711,888; other manufactures of iron and steel, $12,412,981.

The exports during 1916 included: pig-iron and ferro-alloys, 46,100 tons valued at $1,726,396; scrap-iron and steel, 114,300 tons valued at $1,357,018; wire and wire nails, 122,526 tons valued at $8,597,320; agricultural implements valued at $3,740,494; automobiles and bicycles, $6,807,499; other manufactures of iron and steel, $729,831.

Exports of Iron and Steel Goods, the Products of Canada, during the Calendar Years 1917 and 1918.

		1917.			1918.		
		Quantity.	Value.	Average Value.	Quantity.	Value.	Average Value.
			$	$		$	$
Stoves	No.	.....	50,451	.....	.....	84,640	.....
Gas buoys and parts of	$	.....	85	.....	.....	.....	.....
Castings, n.e.s	$	.....	583,297	.....	.....	516,742	.....
Pig-iron	Tons.	12,081	423 914	35·08	2,130	169,495	79·58
Ferro-silicon and ferro-alloys	"	33,212	2,616,924	78·79	23,781	2,671,434	112·33
Bars and rods†	"	41,321	3,633,787	87·94	105,285	10,312,657	97·95
Billets, ingots and blooms†	"	41,558	1,831,917	44·08	61,782	2,645,943	42·83
Rails†	"	26,402	1,605,742	60·82	12,952	575,062	44·40
Wire and wire nails	"	105,482	9,823,700	93·13	.....	6,294,195	.....
Machinery (linotype machines)	$	.....	6,977	.....	.....	5,937	.....
Machinery, n.e.s	$	.....	2,499,581	.....	.....	5,349,457	.....
Sewing machines, parts of	$	.....	157,809	.....	.....	50,054	.....
Washing machines, etc	$	.....	6,400	.....	.....	14,447	.....
Typewriters	No.	1,883	97,904	51·99	3,461	192,401	65·59
Scrap iron and steel	Tons.	176,591	2,300,022	13·02	51,545	853,097	16·55
Hardware, tools, etc	$	.....	940,347	.....	.....	1,992,883	.....
Hardware, n.e.s	$	.....	917,177	.....	.....	1,995,603	.....
Cream separators*	$	.....	180,923	.....	.....	115,120	.....
All other iron and steel	$	.....	7,000,678	.....	.....	8,907,060	.....
Agricultural implements—							
Mowing machines	No.	12,149	486,593	40·16	8,694	566,878	65·20
Reapers	"	2,771	188,897	68·17	457	39,573	86·59
Drills	"	6,240	314,435	50·39	8,997	791,590	87·98
Harvesters and binders	"	9,502	1,158,751	121·93	5,549	989,031	178·24
Ploughs	"	25,354	1,150,386	45·37	.....	1,536,550	.....
Harrows	"	4,093	93,609	22·87	5,104	141,871	27·80
Hay rakes	"	4,704	116,395	26·86	1,126	43,315	38·47
Seeders	"	26	2,621	100·81	37	3,432	92·76
Threshing machines	"	1,172	274,764	234·44	478	219,174	458·52
Cultivators	"	6,336	170,611	26·93	3,383	147,724	43·67
All other	$	.....	297,640	.....	.....	371,667	.....
Parts of	$	.....	1,025,275	.....	.....	833,965	.....
Automobiles	No.	9,492	4,561,875	480·60	10,361	5,076,076	489·92
" parts of	$	.....	2,035,769	.....	.....	919,738	.....
Bicycles	No.	454	61,984	136·53	93	4,951	53·24
" parts of	$	.....	52,260	.....	.....	91,807	.....
Gasolene engines	No.	800	152,275	190·34	1,395	271,173	194·39
Total		.....	46,791,681	.....	.....	54,764,742	.....

† 9 months in 1917.

Annual Exports of Iron and Steel Products since 1909.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
1909*	$ 7,172,413	1913	$13,999,149	1917	$ 46,791,681
1910	7,895,489	1914	14,391,746	1918	54,764,742
1911	9,907,281	1915	48,268,148		
1912	10,682,484	1916	63,958,558		

*Agricultural implements, automobiles and bicycles included in 1909 and subsequent years.

Separate records covering a period of years, of the annual exports of pig-iron and ferro-alloys and of scrap iron and steel have already been given on previous pages.

The total value of the imports of iron and steel goods during the calendar year 1918, subject to the explanation already made in respect to certain products not recorded under the usual and regular classification and therefore omitted from this record was $169,538,669, as compared with a value of $187,191,534 imported during the calendar year 1917, and $129,090,241 imported during the calendar year 1916.

Between 1895 and 1904 the imports of iron and steel increased from about $8,600,000 to over $40,000,000. During the next five years there was comparatively little change, but from 1909 to 1913 the increase was again very rapid. During the latter part of 1913 there was, however, a distinct check to imports with the heavy falling off shown in 1914 and 1915. These imports include all classes of manufactured iron and steel goods as well as those of crude form. In many cases the values only of the imported goods are given, so that a total tonnage of imports cannot be stated. In the case of most of the crude materials, however, the quantities are given and a compilation of these showing the importation of the crude forms of iron and steel since 1909 is shown in the accompanying tables.

Thus, during the twelve months ending December 31, 1918, there were imported 786,097 tons of iron and steel valued at $70,493,861 or an average of $89.68 per ton, together with other iron and steel goods the quantities of which are not stated, valued at $99,044,808.

During the twelve months ending December 31, 1917, there were imported 929,776 tons of iron and steel valued at $84,448,580, or an average of $90.83 per ton, together with other iron and steel goods, the quantities of which are not stated, valued at $102,742,954.

During the twelve months ending December 31, 1916, there were imported 864,916 tons of iron and steel valued at $52,114,258, or an average of $60.25 per ton, together with other iron and steel goods of which the quantities are not stated, valued at $76,975,990.

Summary of Imports of Iron and Steel, 1917 and 1918.

Material.	1917.			1918.		
	Tons.	Value.	Average.	Tons.	Value.	Average.
		$	$		$	$
Pig-iron and kentledge	83,416	2,764,165	33·14	67,397	2,102,435	31·19
Ferro-alloys and chrome steel	12,886	2,045,595	158·75	35,576	4,335,109	121·87
Ingots, blooms, billets, puddled bars, etc	(b)20,777	1,401,149	67·46	(c)3,409	262,210	76·91
Scrap iron and scrap steel	20,654	454,079	21·99	57,189	775,526	13·56
Plates and sheets	185,074	17,582,700	95·00	158,613	14,114,139	88·98
Tin plates and sheets	66,676	9,985,631	149·76	72,844	11,403,887	156·55
Bars, rods, hoops, bands, etc	228,512	22,567,187	98·76	171,116	17,849,982	104·31
Structural iron and steel	185,965	15,282,012	82·18	145,215	11,004,159	75·78
Rails and connexions	22,213	944,595	42·52	10,152	561,970	55·36
Pipe and fittings (a)	2,348	143,124	60·96	1,906	128,257	67·29
Nails and spikes	10,928	892,021	81·63	4,500	404,913	89·98
Wire (a)	51,764	4,409,376	85·18	36,360	3,721,514	102·35
Forgings, castings and manufactures	38,563	5,976,946	154·98	21,820	3,829,760	175·52
Total	(b)929,776	84,448,580	90·83	(c)786,097	70,493,861	89·68
Other iron and steel products valued at		102,742,954			99,044,808	
Total value of imports of iron and steel		187,191,534			169,538,669	

(a) There are additional imports of pipe and wire included under "other iron and steel products."

(b) This figure should be increased by nearly 150,000 tons and the value in proportion, because of the imports of steel billets entered under a general classification. See explanation under steel billets, page No.

(c) For the same reason as indicated under note (b) this item should perhaps be increased by about 277,000 tons and a value over $19,000,000.

Summary of Tonnage of Iron and Steel Imported during Calendar Years 1913-1917.

(In short tons.)

Material.	1913.	1914.	1915.	1916.	1917.
Pig-iron and iron kentledge	236,769	78,660	47,482	58,330	83,416
Ferro-products and chrome steel	30,678	22,271	13,905	14,810	12,886
Ingots, blooms, billets, puddled bars, etc	52,872	13,049	54,118	(c)20,876	(b)20,778
Scrap iron and scrap steel	104,747	27,688	11,477	11,574	20,654
Plates and sheets	365,675	227,633	224,484	225,439	185,074
Tin plates and sheets	58,031	50,791	45,165	57,543	66,676
s, rods, hoops, bands, etc	277,879	148,368	156,990	198,652	228,512	
ructural iron and steel	439,871	160,538	126,780	158,905	185,985
Rails and connexions	182,421	42,064	12,481	14,003	22,213
Pipe and fittings (a)	30,663	15,614	4,489	5,399	2,348
Nails and spikes	7,584	4,864	1,822	4,103	10,928
Wire (a)	70,712	66,280	49,529	60,115	51,764
Forgings, castings and manufactures	32,604	20,339	22,585	29,137	38,562
Total	1 90,506	878,179	771,007	(c) 864,916	(b) 929,776

(a) There are additional imports of pipe and wire included under "other iron and steel products."
(b) See footnote to previous table.
(c) This figure should be increased by nearly 100,000 tons and the value in proportion, because of the imports of steel billets entered under a general classification. See explanation under steel billets, page No.

Summary of Tonnage of Iron and Steel Imported 1909-13.

(In short tons.)

Material.	Twelve Months Ending March.				
	1909.	1910.	1911.	1912.	1913.
Pig-iron and iron kentledge	58,591	159,500	270,102	201,112	291,904
Ferro-products and chrome steel	13,206	15,153	19,182	18,548	23,378
Ingots, blooms, billets, puddled bars, etc	8,887	36,819	48,305	89,190	86,745
Scrap iron and scrap steel	26,212	28,797	53,824	78,378	103,317
Plates and sheets	116,610	200,575	205,690	243,461	376,633
Tin plates and sheets	26,859	39,866	44,025	45,802	64,571
Bars, rods, hoops, bands, etc	73,261	117,159	183,865	195,139	278,878
Structural iron and steel	162,735	195,7[illegible]	232,585	268,572	377,551
Rails and connexions	32,543	55,183	36,690	97,062	156,318
Pipe and fittings	18,309	16,705	28,831	26,627	40,987
Nails and spikes	1,611	3,476	3,374	7,201	11,420
Wire	39,375	68,211	64,850	69,597	80,846
Forgings, castings, and manufactures	14,394	18,093	24,523	27,668	47,195
Total	592,593	955,291	1,215,936	1,368,357	1,939,743

Annual Imports of Iron and Steel Products since 1895.

Year.	Value.	Year.	Value.	Year.	Value.	Year.	Value.
	$		$		$		$
1895 (a)	8,684,024	1901	25,023,453	1907*	44,739,403	1913 (b)	148,579,272
1896	10,206,759	1902	31,591,488	1908 (b)	64,257,238	1913 (c)	145,226,972
1897	11,063,156	1903	39,536,867	1909	42,075,797	1914	80,063,679
1898	16,340,992	1904	40,449,175	1910	62,356,974	1915	74,308,983
1899	19,463,329	1905	40,820,233	1911	88,179,152	1916	129,090,248
1900	27,926,766	1906 (a)	42,210,305	1912	105,614,450	1917	187,191,534
						1918 (c)	169,538,669

*Nine months ending March, 1907.
(a) Twelve months ending June from 1895 to 1906 inclusive.
(b) Twelve months ending March from 1908 to 1913 inclusive.
(c) Twelve months ending December from 1913 to date.

Imports of Iron and Steel Goods, 1917-18.—*Continued.*

Material.		Calendar Year 1917.			Calendar Year 1918.		
		Quantity.	Value.	Value per unit.	Quantity.	Value.	Value per unit.
			$	$		$	$
Agricultural implements:—							
Building attachments	$		10,233			27,930	
Cultivators, weeders and parts of	$		101,611			142,948	
Drills, seed	No.	9,771	234,430	23 99	6,061	431,822	71 25
Farm, road or field rollers	"	303	9,583	31 63	27	613	22 70
Forks, pronged	"	23,308	13,972	0 60	12,979	10,306	0 79
Harrows, and parts of	$		281,542			486,628	
Harvesters, self-binding	No.	5,193	666,485	128 34	2,609	457,757	175 45
Hay-loaders	"	201	12,151	60 45	195	18,426	94 55
Hay-tedders	"	354	12,945	36 57	516	35,413	68 35
Hoes	"	17,354	6,978	0 40	22,330	9,186	0 41
Knives, edging	"	1,145	247	0 22	1,082	360	0 33
Knives, hay or straw	"	2,653	1,202	0 45	3,264	1,256	0 38
Lawn mowers	"	16,522	71,128	4 30	7,357	49,109	6 68
Manure spreaders	"	574	44,309	77 19	391	39,332	100 59
Mowing machines	"	5,313	219,312	41 28	1,868	114,318	61 20
Ploughs and parts of	$		2,296,526			2,704,154	
Post-hole diggers	No.	5,434	5,050	0 93	6,243	7,011	1 12
Potato diggers	"	980	46,004	46 47	1,087	66,860	62 67
Rakes, horse	"	2,643	58,020	21 95	2,761	73,125	26 29
Rakes, n.o.p.	"	7,809	2,884	0 37	5,967	2,123	0 36
Reapers	"	128	7,365	57 72	122	9,008	73 80
Scythes	Doz.	2,786	18,750	6 73	1,237	12,201	9 94
Sickles or reaping hooks	"	741	1,179	1 59	287	526	2 54
Snaths	"	10	71	7 10	21	106	5 05
Spades and shovels	"	2,761	12,628	4 57	4,233	12,232	2 88
Spade and shovel blanks and iron and steel cut to shape for same	"	411	1,490	3 65	16	93	5 81
Other agricultural implements	$		105,386			128,404	
Parts of agricultural implements, n.o.p.	$		497,211			694,444	
Total agricultural implements			4,730,329			5,396,544	
Anchors for vessels	Tons	438·9	70,368	160 32	706·2	143,980	197 87
Angles, beams, channels, and other rolled shapes of iron or steel, not punched, drilled, or further manufactured than rolled, weighing not less than 35 pounds, per lineal yard, not being square, flat, oval or round shapes, and not being railway bars or rails	"	67,819·4	4,829,163	71 21	49,128	3,110,686	63 30
Angles, tees, beams, channels, girders and other rolled shapes or sections, not punched, drilled or further manufactured than rolled, n.o.p.	"	46,428·5	3,323,794	71 59	29,739·3	1,904,363	64 04
Anvils and vises	$		104,562			104,518	

Axles and axle parts, n.o.p. and axle blanks and parts thereof of iron or steel for railway, tramway or other vehicles	$		2,657,412			2,639,656		
Automobiles and motor vehicles of all kinds	No.	10,865	12,108,540	670 16	11,829	9,366,281	791 14	
Automobiles and motor vehicles, parts of	$		7,555,535			6,631,300		
Ball bearings, flat steel, cold rolled, not over ¼" thick, for the manufacture of cups and cones for ball bearings	Tons	0·1	16	160 00				
Balls, steel, adapted for use on bearings of machinery and vehicles	$		108,235			115,437		
Bands, strips or sheets No. 14 gauge or thinner, coated, polished or not, and rolled iron or steel sections, not being ordinary square, flat or round bars, when imported by manufacturers of saddlery, hardware and harnes	$		97,305			24,561		
Bar, hoop, band, scroll or strips, sheet or plate of any size, thickness or width, galvanized or coated with any material or not, and steel blanks for the manufacture of milling cutters when of greater value than 3½ cents per pound	Tons	101,839·3	13,876,414	136 26	64,908·3	10,927,545	168 35	
Bar iron or steel rolled, whether in coils, bundles, rods or bars, comprising rounds, ovals, squares and flats, n.o.p	"	54,811·1	3,550,242	64 94	45,905·6	2,985,851	65 22	
Bars or sheets of steel, to be used exclusively in the manufacture of shovels	"	2,179·1	109,124	77 61	2,842·3	216,131	76 04	
Bayonets, swords, fencing foils and masks	$		6,495			1,375		
Billets of iron or steel, weighing not less than 60 pounds per lineal yard	Tons	10,186·1	663,668	65 15	2,992·4	232,065	77 55	
Billets of steel, n.o.p	"	348·2	22,573	64 83	42 9	2,688	60 79	
Bridges or parts thereof, iron or steel structural work, columns, shapes or sections, drilled, punched or in any further state of manufacture than rolled or cast, n.o.p	$		168,921			277,832		
Bridges and tunnels, crossing the boundary, materials to be used in Canada in the construction of:								
Butts and hinges, n.o.p	$		118,500			96,431		
Cart or wagon skeins or boxes	Tons	130·5	19,002	145 61	89·7	19,421	216 51	
Castings, malleable iron, when imported by manufacturers of mowers, binders, harvesters and reapers	$		985,582			260,125		
Castings, iron (malleable), (9 mos.)	$					189,500		
Castings, iron, n.o.p., (not malleable), (9 mos.)	$					838,325		
Castings, steel, (9 mos.)	$					148,891		
Castings, n.o.p. (3 mos. in 1918)	$		1,978,052			434,728		
Chains, coil chain, chain links, including repair links and chain shackles, of iron or steel, 1½" in diameter and over	Tons	176·1	30,525	173 34	105·2	24,945	237 12	
Chains, coil chain and links, including repair links and chain shackles, of iron or steel, n.o.p	"	541·5	79,646	147 08	329·7	76,227	231 20	
Chain, malleable sprocket or link belting, for the manufacture of agricultural implements	$		247,491			215,122		
Chains, n.o.p	$		277,583			250,008		
Chains, rolled round rods in the coil, of iron or steel, for the manufacture of	Tons	1,957·7	126,192	64 46	2,364·5	151,391	66 85	
Chrome steel	Tons	57·7	15,605	270 43	292·5	51,976	177 79	
Cream separators and steel bowls for	$		475,857			617,511		
Cream separators, materials which enter into the construction and form part of, when imported by manufacturers of cream separators to be used in the manufacture thereof, and articles of metal for use in the manufacture of cream separator parts	$		490,510			587,872		

Imports of Iron and Steel Goods, 1917-18.—*Continued.*

Material.		Calendar Year 1917.			Calendar Year 1918.		
		Quantity.	Value.	Value per unit.	Quantity.	Value.	Value per unit.
			$	$		$	$
Cutlery:—Pen-knives, jack-knives and pocket-knives of all kinds	$		257,283			245,268	
Cutlery:—Knives and forks of steel, plated or not, n.o.p.	$		245,362			209,336	
Cutlery:—n.o.p.	$		512,050			580,315	
Engines, boilers, etc.—							
Boilers, steam and parts	$		257,587			266,516	
Boilers, n.o.p. and parts of	$		228,043			153,039	
Fire engines, n.o.p.	No.	6	3,725	620 83	6	11,421	1,903 50
Gasoline and gas engines	"	58,024	6,680,657	115 14	50,683	6,242,436	123 17
Locomotives for railways	"	76	497,842	6,550 55	78	593,956	7,614 83
Locomotive parts	$		176,686			147,654	
Motor cars for railways and tramways	No.	162	442,550	2,731 79	67	90,142	1,345 40
Steam engines	"	144	401,265	2,786 56	167	366,995	2,197 57
Ferro-manganese and spiegeleisen containing more than 15% manganese	Tons	10,872	1,430,091	131 54	34,023	3,743,982	110 04
Ferro-manganese and spiegeleisen containing not more than 15% manganese, and other ferro-alloys, n.o.p.	"	705·6	547,706	776 23	915·1	516,717	568 07
Ferro-silicon containing more than 15% silicon	"	7·6	2,126	279 73	0·6	225	375 00
Ferro-silicon containing not more than 15% silicon	"	1,243·3	50,067	40 27	345·2	22,209	64 34
Fire extinguishing machines, including sprinklers for fire protection	$		115,218			121,395	
Flat eye bar blanks, not punched nor drilled, for use exclusively in the manufacture of bridges or of steel structural work or in car construction	Tons	873	131,462	150 58	2	371	185 50
Forgings of iron or steel, of whatever shape or size, or in whatever state of manufacture, n.o.p., and hammered, drawn or cold rolled iron or steel bars or shapes, n.o.p.	"	7,890·5	1,424,159	180 49	2,218·5	464,727	209 48
Gas buoys: Articles for the manufacture of gas buoys and gas beacons for the Government of Canada, or for export	$		4,400			10,491	
Gun barrels in single tubes, forged, rough bored	$						
Guns, rifles, including air guns and air rifles (not being toys) muskets, cannons, pistols, revolvers, or other firearms	$		381,169			150,592	
Guns and rifles: Materials or parts in the rough, unfinished, and screws, nuts, bands and springs, and steel for rough unfinished parts, to be used in rifles to be manufactured for the Government of Canada	$		158,677				
Guns and rifles: Materials and tools not manufactured in Canada up to the required standard necessary for any factory for the manufacture of rifles for the Government of Canada	$		23,088				
Hardware, viz.:—Builders, cabinetmakers', upholsterers', harness-makers', saddlers', and carriage hardware, including curry-combs, n.o.p.	$		758,262			550,944	

Hoop, band, scroll or strip, No. 14 gauge and thinner, galvanized or coated with other metal or not, n.o.p. including drawn iron or steel of this description for the manufacture of mats	Tons	13,592·6	1,372,883	101 00	6,783·9	691,211	101 89
Hoop, band, scroll or strip, No. 14 gauge and thinner, and rolled iron or steel sheets, imported for the manufacture of galvanized iron or steel hoop, band, scroll, strip or sheet	"	6,055	787,484	130 06	7,773·5	757,148	97 40
Hoop, band, scroll or strip, 12" or less in width, No. 13 gauge and thicker, n.o.p.	"	1,322·3	102,941	77,86	1,315·5	84,711	64 39
Hoop, iron or steel, rolled (galvanized), Nos. 12 and 13 gauge	"	111·8	8,510	76 12	43·4	3,092	71 24
Horse, mule and ox shoes	$		66,297			53,928	
Ingots, cogged ingots, blooms, slabs, puddled bars and loops or other forms, n.o.p., less finished than iron or steel bars, but more advanced than pig-iron, except castings	Tons	10,243·2	714,908	69 79	373·6	27,537	73 71
Kentledge	"	26	663	25 50	1	29	29 00
Knife blades or blanks, and table forks of iron or steel, in the rough, not handled, filed, ground or otherwise manufactured	$		998			1,259	
Locks of all kinds	$		368,819			386,901	
Machinery:—							
Adding machines	No.	1,910	415,971	217 78	1,574	499,625	317 42
Beet root sugar factories—machinery and structural iron for	$		20,441			42,070	
Briquette-making machines	$		426			25,390	
Carding, spinning, weaving or braiding machinery, or machinery for knitting fibrous material, of a class or kind not made in Canada	$		2,251,298			1,844,067	
Cement-making machinery	$		32,500			22,017	
Coal-handling machinery	$		91,687			322,173	
Concrete-mixing machines	No.	64	34,423	537 86	39	26,680	684 10
Cordage, twine or linen manufacturing machinery, or machinery for the preparation of flax fibre, of a class or kind not made in Canada	$		36,101			62,568	
Cranes and derricks	No.	111	594,749	5,358 10	112	429,729	3,836 87
Dental engines, electric	"	162	18,339	113 20	82	9,697	118 26
Diamond drills and parts of, not to include motive power	$		75,650			47,179	
Engines, portable, with boilers in combination and traction engines for farm purposes	No.	6,137	6,150,659	1,002 23	1,193	2,113,877	1,771 90
Fanning mills	"	2,940	48,960	16 65	3,564	66,958	18 79
Fodder or feed cutters	"	1,610	63,501	39 54	1,687	76,069	45 09
Gold mining, alluvial, machinery and appliances for, of a class or kind not made in Canada, and elevators and machinery for floating dredges used in gold mining	$		94,547			96,559	
Grain crushers	No.	537	11,148	20 76	340	15,094	44 39
Hay presses	"	230	55,592	241 70	73	34,013	465 93
Horse powers for farm purposes	"	2	90	45 00	2	20	10 00
Mining, smelting and reducing machinery, and machinery for use exclusively in mining or metallurgical operations, n.o.p.	$		906,418			705,568	
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, rock drills, air compressors, and percussion coal cutters	No.		664,951			874,097	
Paper and pulp mill machinery	$		1,500,928			872,321	
Portable machinery, n.o.p., and parts of	$		49,507			59,934	
Presses, printing and lithographic	$		435,188			457,086	

Imports of Iron and Steel Goods, 1917-18. *-Continued.*

Material.		Calendar Year 1917.			Calendar Year 1918.		
		Quantity.	Value.	Value per unit.	Quantity.	Value.	Value per unit.
Machinery—*Continued.*			$	$		$	$
Printing presses, newspaper, of not less value by retail than $1,500 each, of a class or kind not made in Canada	No.	56	205,741	3,673 95	49	211,514	4,316 61
Rolling-mill machinery	$		380,354			333,184	
Ruling, folding, building, embossing, creasing, or cutting machinery, when for use by printers, book-binders and by manufacturers of articles made from paper or cardboard, including parts thereof	$		385,879			362,771	
Saw and planing mills, portable	No.	93	16,888	181 59	77	13,099	170 12
Saw-mill machinery	$		259,872			110,166	
Sewing machines	No.	16,819	388,033	23 07	10,535	290,898	27 61
Sewing machine parts	$		224,931			247,262	
Sewing machine attachments	$		62,529			56,044	
Shovels, steam and electric	No.	21	294,759	14,036 14	16	151,582	9,473 88
Threshing machine separators	"	2,119	1,532,869	723 39	1,269	1,038,406	818 29
Threshing machine separators, parts of, including wind stackers, baggers, weighers and self-feeders therefor and finished parts thereof for repairs, when imported separately	$		518,449			352,758	
Traction engines for farm purposes, costing not more than $1,400 in the country of production	$				9,231	8,533,706	924 46
Traction engines, parts of, such as automobile traction attachments for farm purposes	$					871,721	
Traction ditching machines (not being ploughs), adapted for tile drainage on farms, valued by retail at not more than $3,000 each, and parts thereof for repairs	No.	22	73,772	3,353 27	32	50,753	1,586 03
Typecasting and typesetting machines and parts thereof, adapted for use in printing offices	$		665,290			711,758	
Type-making accessories for printing presses	$		13,012			19,480	
Typewriting machines	No.	12,720	713,531	56 10	12,443	795,536	63 93
Washing machines, domestic	"	16,570	274,161	16 55	13,761	297,793	21 64
Well-drilling machinery, and apparatus of a class or kind not made in Canada for drilling for water, natural gas or oil and for prospecting for minerals, not to include motive power	$		4,992			7,478	
Windmills, and complete parts thereof	$		73,198			68,945	
Other machinery composed wholly or in part of iron or n.o.p., and iron or steel integral parts of	$		17,560,606			15,390,480	
Nail rods, rolled, under half an inch in diameter, for the manufacture of horse shoe nails	Tons.	1,498·4	108,619	72 49	1,647·9	73,722	44 74
Nails, brads, spikes and tacks of all kinds, n.o.p.	"	185·2	60,108	324 56	116·0	44,801	386 21
Nails and spikes, cut (ordinary builders')	"	38·9	3,119	80 18	16·8	2,063	122 80
Nails, spikes, composition and sheathing nails	"	8·4	1,668	198 57	11·9	3,760	315 96
Nails, wire of all kinds, n.o.p.	"	9,712·1	754,693	77 71	3,510·9	295,341	84 12
Needles of any material or kind, n.o.p.	$		221,446			271,962	

Nuts, rivets and bolts, with or without threads:—nut, bolt and hinge blanks and T and strap hinges of all kinds, n.o.p.	Tons.	937·7	174,637	186·24				
Nuts, rivets and bolts with or without threads:—								
Nut and bolt blanks	"	2,912·7	534,037	181 97	1,826·6	402,053	220 11	
Pig-iron	"	82,758·0	2,744,055	33 16	67,396	2,102,406	31 19	
Pig-iron (charcoal)	"	632·0	19,447	30 77				
Pipe cast iron, of every description	"	2,348·5	143,124	60 94	1,906·1	128,257	67 29	
Pipe-fittings for iron or steel pipes of every description	$		919,467			776,493		
Pipe—iron or steel, not butt or lap welded, and wire bound wooden pipe, not less than thirty inches internal diameter, when for use exclusively in alluvial gold mining	$		423					
Pipe—wooden, wire-bound, n.o.p.	$		5,287			3,686		
Plate, boiler of iron or steel, not less that 30 inches in width and not less than ¼ inch in thickness, for use exclusively in the manufacture of boilers	Tons.	7,233·7	826,440	114 25	11,020·8	961,888	87 28	
Plates, rolled, not less than 30 inches in width and not less than ¼ inch in thickness, n.o.p.	"	12,877·6	1,066,440	82 81	17,209·2	1,181,940	68 68	
Plates or sheets of steel, cold rolled, sheared edges, over 14 gauge, not less than 1½ inches wide, for manufacture of mower bars, hinges, typewriters and sewing machines	"	302·2	30,706	101 62	326·5	31,993	97 99	
Plates, or sheets, rolled, sheared or unsheared, and skelp iron or steel, sheared or rolled in grooves, n.o.p.	"	8,941·2	737,789	82 52	5,118·7	360,609	70 45	
Plate, steel, universal mill or rolled edge plates of steel over 12 inches wide, imported for use in the manufacture of bridges or of structural work or in car construction	"	17,598·0	1,475,189	270 45	5,326·3	362,352	68 04	
Plough plates, shares or mould boards, land sides, and other plates for agricultural implements, when cut to shape from rolled plates of steel, but not moulded, punched, polished or otherwise manufactured	"	6,835·6	888,209	129 94	8,008·9	1,405,323	175 47	
Pumps, hand, n.o.p.	No.	33,939	220,361	6 49	23,644	221,226	9 36	
Pumps, power and parts of	"	6,468	856,121	132 36	6,817	851,173	124 86	
Rails for railways and tramways	Tons.	18,160	689,197	37 95	7,787	404,417	51 93	
Railway fish-plates	"	2,279·6	146,615	64 32	1,220·3	[illegible]	73 80	
Railway spikes	"	982·7	72,216	73 49	843·6	58,601	69·46	
Railway switches, frogs, crossings, and intersections	$		151,902			356,947		
Railway tie-plates	Tons.	1,773·2	108,783	61 34	1,144·5	67,494	58 97	
Rolls of chilled iron or steel	"	102·7	7,435	72 40	132·3	19,460	147 09	
Sad or smoothing, hatters' and tailors' irons, not plated	$		4,476			4,927		
Safes and doors for safes and vaults	$		48,271			36,687		
Scales, balances, weighing beams and strength-testing machines of all kinds	$		179,357			209,211		
Scrap iron and scrap steel, old and fit only to be remanufactured, being part of or recovered from any vessel wrecked in waters subject to the jurisdiction of Canada	Tons	7·5	[illegible]	44 00				
Scrap cast	"	6,559	126,449	19 28	1,022	23,645	23 14	
Scrap, wrought, being waste or refuse, including punchings, cuttings, and clippings of iron or steel plates or sheets, having been in actual use; crop ends of tin plate bars, blooms and rails, the same not having been in actual use	"	14,087·1	327,300	23 23	56,166·6	751,881	13 39	

Imports of Iron and Steel Goods, 1917-18.—*Continued.*

Material.		Calendar Year 1917.			Calendar Year. 1918		
		Quantity.	Value.	Value per unit.	Quantity.	Value.	Value per unit.
			$	$		$	$
Screws, iron and steel, commonly called "wood screws," n.o.p., including lag or coach screws, plated or not, and machine or other screws, n.o.p	$		58,916				
Screws, commonly called "wood screws" of iron, brass or other metal	$		117,048			154,764	
Screws, lag or coach, plated or not, machine or other screws, n.o.p.	$		5',672			57,764	
Shafting, round, steel, in bars not exceeding 2½" in diameter	Tons	3,778·8	328,905	87 04	2,353·8	238,406	101 29
Shafting, steel, turned, compressed or polished	$		67,326			57,737	
Sheets, Canada plates, Russia iron, terne plate, and rolled sheets of iron or steel, coated with zinc, spelter or other metal, of all widths or thicknesses, n.o.p	Tons	8,202	842,551	102 73	10,786·7	683,711	63 38
Sheets, iron or steel, corrugated, galvanized	"	32·9	4,182	128 11	0·1	9	90 00
Sheets, iron or steel, corrugated, not galvanized	"	2·1	371	176 67			
Sheets, flat, of galvanized iron or steel	"	12,458·3	1,706,881	137 01	6,113·6	719,983	117 76
Sheets, rolled, polished or not, No. 14 gauge and thinner, n.o.p.	"	61,424·3	7,073,801	115 16	39,384·7	4,465,322	113 38
Sheet steel No. 24 and 17 gauge, in sheets 63" long, and from 18 to 32" wide, when imported by the manufacturers of tubular bow sockets for use exclusively in the manufacture of such articles in their own factories	"	69·8	8,448	121 03	82·5	8,587	104 08
Sheet steel, crucible sheet, 11 to 16 gauge, 2½ to 18" wide, for the manufacture of mower and reaper knives when imported by manufacturers thereof for use exclusively in the manufacture of such articles in their own factories	"	524	103,758	198 01	688·3	131,108	190 48
Ships, or vessels—Angles, beams, knees, masts, plates, sheets and parts thereof and cable chains for	Tons	54,119·2	5,653,866	104 47	61,021·3	5,627,438	92 22
Ships or vessels of iron or steel—Manufactured articles of iron or steel or brass for use in the construction of, of a class or kind not made in Canada	$		644,730			1,097,958	
Skates of all kinds, roller or other and parts thereof	$		42,887			23,923	
Skelp iron or steel, sheared or rolled in grooves, not over 4½" wide, for the manufacture of rolled iron tubes not over 1½" in diameter	Tons.	1,533·8	102,966	67 13	2,529·5	196,056	77 50
Skelp iron or steel, sheared or rolled in grooves for the manufacture of wrought iron or steel pipe	"	65,027·7	4,232,907	65 09	57,343·8	3,967,610	69 19
Springs, steel, for the manufacture of surgical trusses	"	0·4	633	1,582 50	0·4	414	1,035 00
Springs, n.o.p. and parts thereof, of iron or steel, for railway, tramway, or other vehicles	$		207,640			235,926	
Steel, rolled, for saws and straw cutters, not tempered or ground, nor further actmanufured than cut to shape, without indented edges	Tons	1,407·2	433,663	308 17	1,064·6	354,247	332 75
Steel No. 12 gauge and thinner, but not thinner than No. 30 gauges, for the manufacture of bed fasts, buckle clasps, furniture castors and ice creepers	"	140·2	16,591	118 34	120·9	16,587	137 19

Steel, No. 20 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of corset steels, clock springs, and shoe shanks	Tons	225·3	71,515	317 42	198·5	92,354	465 6	
Steel wool	$		11,525			11,359		
Stoves of all kinds for coal, wood, oil, spirits, or gas	$		507,227			454,847		
Stove urns of metal, and dovetails, chaplet and hinge tubes of tin, for use in the manufacture of stoves	$		27,279			33,407		
Surgical and dental instruments of metal, and surgical needles, and surgical operating tables for use in hospitals, X-ray apparatus and parts thereof, and microscopes valued at not less than $50 each by retail	$		632,995			789,993		
T and strap hinges of all kinds, n.o.p., and hinge blanks	Tons	232·8	31,129	133 71	174·1	26,521	152 33	
Tacks, shoe	"	0·6	207	345 00	1·1	347	315 45	
Tin plates and sheets	"	66,675·9	9,985,631	149 76	72,843·9	11,403,887	156 55	
Tires, locomotive and car wheel of steel, in the rough	"	9,614,4	1,440,624	149 84	8,707·3	1,524,801	175 12	
Tools and implements :—								
Adzes, cleavers, hatchets, wedges, sledges, hammers, crow-bars, cant-dogs and track tools; picks, mattocks and eyes or poles for the same	$		55,329			58,897		
Axes	Doz.	1,363	12,295	9 02	698	9,621	13 78	
Files and rasps, n.o.p	$		254,239			211,332		
Saws	$		119,115			107,424		
Tools, hand, of all kinds, n.o.p	$		1,052,475			1,004,675		
Tubes for boilers, seamless steel or wrought iron, including flues and corrugated tubes for marine boilers	$		1,513,999			1,855,992		
Tubes, rolled, not joined, or welded, not more than 1¼" in diameter, n.o.p	$		89,761			74,223		
Tubing, brass covered, not over 2" in diameter in the rough for the manufacture of towel bars, bathtub rails, and clothes carriers	$		463					
Tubing, brass covered, not over 3" in diameter, and brass trimmings, not polished, lacquered or otherwise manufactured, for the manufacture of iron or brass bedsteads	$		232,600			183,097		
Tubing, lacquered or brass covered, not over 2" in diameter, brass cased rods, and brass trimmings for the manufacture of carriage rails	$		374			35		
Tubing, lacquered or brass covered, for the manufacture of extension rods for windows	$		5,280			4,253		
Tubing or pipe, plain or galvanized, riveted, corrugated or otherwise specially manufactured, including lock joint pipe, n.o.p	$		277,21[illegible]			323,420		
Tubing, rolled or drawn, square, adapted for use in the manufacture of agricultural implements	$		14,902			16,870		
Tubing, seamless steel, valued at not less than 3½ cents per pound	Tons	766·6	210,355	274 40	888·2	209,146	235 47	
Tubing, wrought or seamless, plain or galvanized, threaded and coupled or not, 4" or less in diameter, n.o.p	$		977,556			486,917		
Tubing, wrought or seamless, plain or galvanized, threaded and coupled or not, over 4", but not over 10" in diameter, n.o.p	$		453,483			172,342		
Tubing, wrought or seamless, plain or galvanized, threaded and coupled or not, over 10" in diameter, n.o.p.)	$		116,206			133,933		
Ware, agate, granite or enamelled iron or steel ware	$		211,654			117,488		
Ware, iron or steel hollow ware, plain black or coated, n.o.p., and nickel or aluminium kitchen or household hollow ware, n.o.p.	$		220,561			258,894		

Imports of Iron and Steel Goods, 1917-1918.—*Concluded.*

Material.		Calendar Year 1917.			Calendar Year 1918.		
		Quantity.	Value.	Value per unit.	Quantity.	Value.	Value per unit.
			$	$		$	$
Wire barbed fencing	Tons	15,538·9	1,309,391	84 27	11,676·5	1,018,099	87 19
Wire, bessemer soft drawn spring of Nos. 10, 12 and 13 gauge respectively, for the manufacture of wire mattresses	"	1,562·9	142,634	91 26	1,195·4	120,058	100 43
Wire, buckthorn strip fencing, woven wire fencing and wire fencing of iron or steel, n.o.p., not to include woven wire, or netting made from wire smaller than No. 14 gauge, not to include fencing of wire larger than No. 9 gauge	$		20,959			29,123	
Wire, crucible cast steel, valued at not less than 6 cents per pound	Tons	287·8	168,494	585 45	229·9	204,331	888 78
Wire, curved or not, galvanized iron or steel, Nos. 9, 12 and 13 gauge, not for use in telegraph or telephone lines	Tons	25,201·9	1,806,891	71 70	16,804·8	1,328,230	79 04
Wire, single or several, covered with cotton, linen, silk, rubber, or other material, including cable so covered	$		252,174			172,328	
Wire, steel, flat, No. 16 gauge or thinner, for the manufacture of crinoline or corset wires and dress stays	Tons	352·2	89,281	253 49	113·2	42,188	372 60
Wire, steel, valued at not less than 2¾ cents per pound for the manufacture of rope	"	2,516	313,123	124 45	2,883·5	601,743	208 68
Wirecloth and wove wire or netting of iron or steel	$		235,034			291,293	
Wire rope for rigging of ships and vessels	Tons	48·7	12,228	251 09	36·6	14,732	402 51
Wire rope, stranded or twisted wire, clothes lines, picture or other twisted wire, and wire cables, n.o.p.	$		606 444			782,779	
Wire, flat steel and steel strips, for the manufacture of buckthorn and plain strip fencing	Tons						
Wire, n.o.p.	"	6,045·6	562,295	93 07	3,419·9	392,043	114 64
Wire bale ties	$		11,392			11,102	
Wire screens, doors and windows	$		12,626			15,643	
Wire rods, rolled, round, in the coil, not over ¼" in diameter, for making wire in the coil	Tons	53,356·4	3,410,312	63 92	40,573·6	2,265,311	55 83
Other manufactures of iron and steel	$		10,730,662			10,518,062	
Total iron and steel			187,191,534			169,538,669